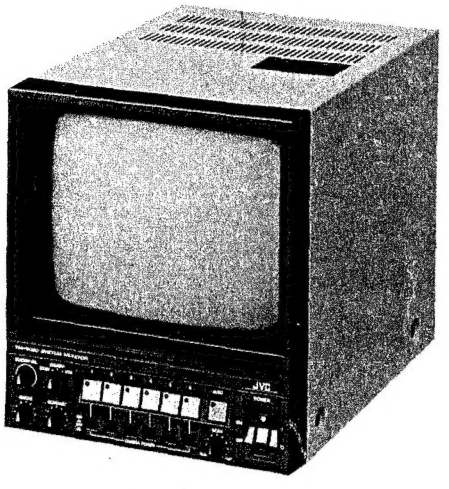
JVC

SERVICE MANUAL

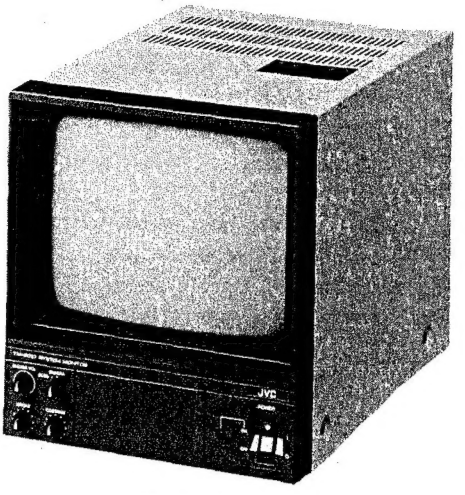
VIDEO MONITOR

TM-9060/TM-9010

(for TK-10/TK-N10)



— TM-9060 —



— TM-9010 —

SPECIFICATIONS

Horizontal resolution	: More than 900 lines (at center)
Scanning frequency	
Horizontal	: 15.75 kHz (U-type)/15.625 kHz (E-type)
Vertical	: 60 Hz (U-type)/50 Hz (E-type)
Inputs	
Camera	: x 6 (TM-9060)/x 1 (TM-9010), TK-10/N10 only
VTR playback (TM-9060 only)	: 1 Vp-p (composite video signal), 75 ohms
Alarm	: x 6 (TM-9060)/x 1 (TM-9010), contact low level
Timer (TM-9060 only)	: Contact low level
Outputs	
Camera-1 (TM-9060 only)	: 1 Vp-p (composite video signal), 75 ohms
Alarm	: Make contact (metal)
Timer (TM-9060 only)	: Open-collector (low level)
Select (TM-9060 only)	: x 6, open-collector (low level)
Video	: 1 Vp-p (composite video signal), 75 ohms
S/N	: 54 dB (w/o sync noise)
Power consumption	: 120 V 60 Hz (U-type) 220/240 V 50/60 Hz (E-type)
Weight	: 9.1 kg (20 lbs) . . . . . TM-9060 7 kg (15.5 lbs) TM-9010

No. 6409R
Sep. 1989

TABLE OF CONTENTS

Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▒▒) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

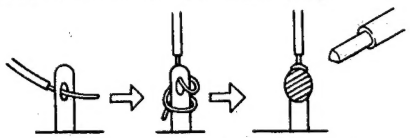


Fig. 1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10—15 kg of force in any direction will not loosen it.

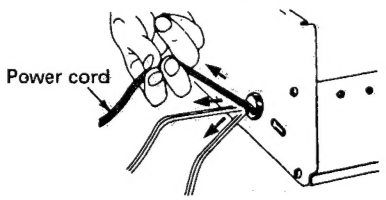


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

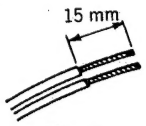


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

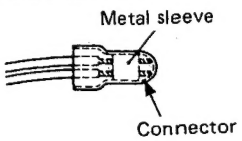


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

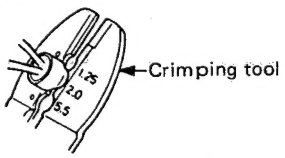


Fig. 6

(5) Check the four points noted in Fig. 7.

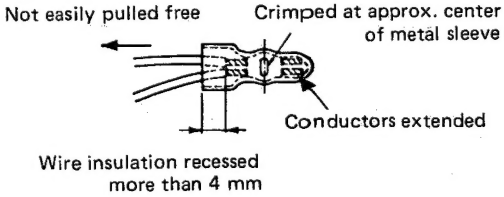


Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. Insulation resistance test

Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. Dielectric strength test

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. Clearance distance

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

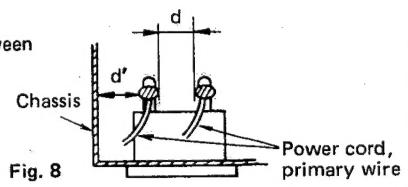


Fig. 8

4. Leakage current test

Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

Measuring Method: (Power ON)

Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

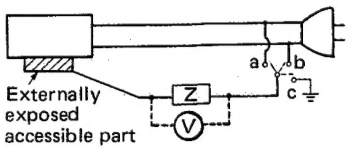


Fig. 9

5. Grounding (Class I model only)

Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).

Measuring Method:

Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

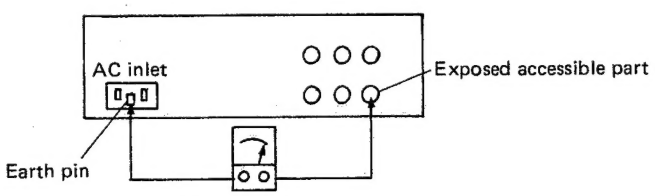


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R≧1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	—	AC 900 V 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R≧10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

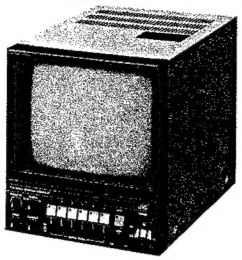
AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF, 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

JVC Instructions

SYSTEM MONITOR TM-9060



For Customer Use:
Enter below the Serial No. which is located on the top of the body. Retain this information for future reference.

Model No. **TM-9060**

Serial No. _____

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER.
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Due to design modifications, data given in this instruction book are subject to possible change without prior notice.

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

AVERTISSEMENT:
POUR EVITER LES RISQUES D'INCENDIE OU D'ELECTROCUTION, NE PAS EXPOSER L'APPAREIL A L'HUMIDITE OU A LA PLUIE.

Thank you for purchasing the JVC TM-9060 System Monitor. To gain maximum benefit from the monitor and for correct operation, please read this booklet carafully. After reading it, retain for future reference.

CONTENTS

FEATURES

- Designed for connection of up to six video cameras (TK-10 or TK-N10) which can be controlled from the six built-in CCUs.
- Built-in video sensor detects changes in the "Video sensor" area set in the picture, to ring buzzer and display picture on the screen.
- Electronic buzzer with variable volume.
- Video input/output terminals for monitoring/recording using a video recorder.
- Camera-1 video signal output terminal for permanent monitoring/recording of an important field of view.
- Auto-scan circuit for monitoring by switching between six video cameras, eliminating the need of additional sequential switcher.
- Camera power switches for remote power ON/OFF control.
- Others: External alarm input/output terminals, selected output terminal, timer input/output terminals, CCU power supply protection circuit (which protects power supply even when loads other than cameras are connected), stand-by function.

PRECAUTIONS

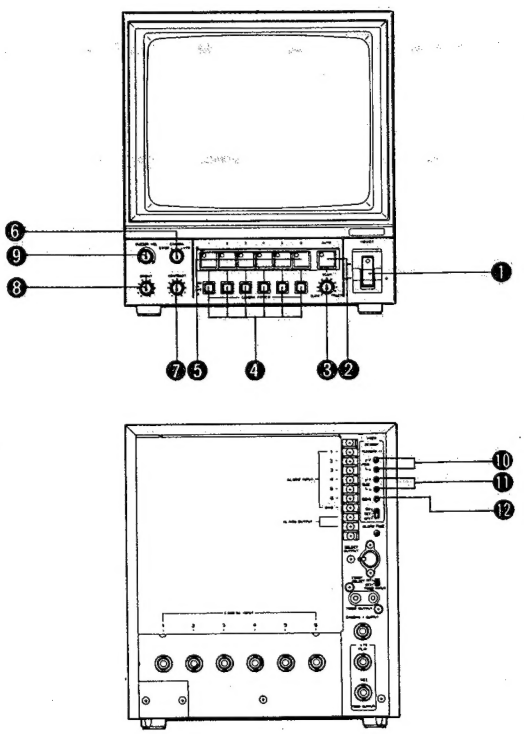
Safety Precautions

- Do not attempt to modify the monitor or operate it with its cover removed.
- Do not allow inflammable objects, water or metallic objects to get inside the monitor, as this could cause damage or a malfunction.
- When there is any abnormality (abnormal noise, smell, smoke, etc.), switch power off and contact your nearest JVC-authorized service agent.

Handling Precautions

- If used near a source of powerful electromagnetic waves or a magnetic field, for example near a radio or TV transmitter, motor, etc., noise could enter the picture.
- The TM-9060 was designed specially for the TK-10/TK-N10 video cameras (optional). It cannot be used with input video signals from other cameras.
- When a wireless microphone or wireless microphone tuner is used near the system monitor, the tuner could pick up noise. In such a case, select another channel.

CONTROLS, CONNECTORS AND INDICATORS



❶ **Power switch (POWER)**

❷ **Auto button (AUTO)** (See pp. 11 – 12)
Inputs from the video camera connected can be switched automatically. When this button is pressed, the lamp lights and pictures from the cameras are switched in sequence.

❸ **Auto scanning time control (SCAN)**
When AUTO button ❷ is depressed, the switching of the monitored pictures can be controlled by this knob.

Note: The duration setting is variable from approx. 0.5 second to 2 minutes.

❹ **Camera power switches (CAMERA POWER)**
Power of each camera connected can be switched ON/OFF separately.

❺ **Manual switching buttons (1, 2, 3, 4, 5, 6)** (pp. 11 – 12)
One of the inputs from the cameras connected can be selected manually. When one of these buttons is pressed, the lamp lights and the picture from the selected camera is displayed.

Note: These buttons are interlocked with Auto button ❷.

❻ **Monitor mode select switch (ST/BY, CAMERA, VTR)** (pp. 11–12)
ST/BY: Select this position when a picture is required only when the video sensor is activated or an external alarm signal is input.
CAMERA: Select this position when the image picked up by the camera is required all the time.
VTR: Select this position when monitoring the picture from a video recorder.

❼ **Contrast control (CONTRAST)**

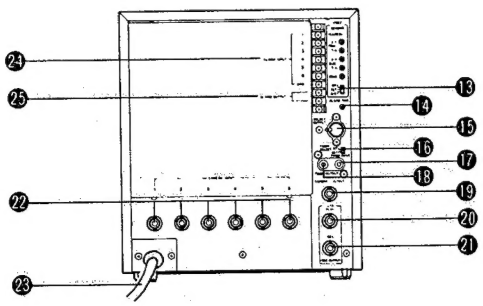
❽ **Brightness control (BRIGHT)**

❾ **Buzzer volume control (BUZZER VOL)** (pp. 8–10)
Adjusts the volume of the buzzer which rings when the video sensor is activated or an external alarm signal is input.

❿ **Sensor position controls (POSI)** (pp. 8–9)
POSI-V: Sets the vertical position of the video sensor.
POSI-H: Sets the horizontal position of the video sensor.

⓫ **Sensor size controls (SIZE)** (pp. 8–9)
SIZE-V: Sets the vertical range of the video sensor.
SIZE-H: Sets the horizontal range of the video sensor.

⓬ **Sensor sensitivity control (SENS)** (p. 9)



⓭ **Video sensor switch** (pp. 8–9)
ON: Set to this position to activate the video sensor.
SET: Set to this position to display the video sensor area.
OFF: Set to this position to deactivate the video sensor.

⓮ **Alarm time control (ALARM TIME)** (pp. 9–10)
Set the time for which the alarm mode should be held (after the video sensor has been activated or an alarm signal is input) from 8 seconds to 20 minute.

⓯ **Selected signal output connector (SELECT OUT)** (pp. 6–7)
The pin (one of pins 1 to 6) with the same number as that of the video camera input which is being displayed outputs an open collector (L level) signal.
Pin 7 is the GND terminal. Pin 8 is used to input a character generator signal for superimposition.

⓰ **Timer select switch (TIMER SELECT)** (pp. 6–7)
INT: Set when using auto scanning time control ❸.
EXT: Set for external control of auto scanning time when AUTO button ❷ is depressed.

⓱ **Timer input connector (TIMER INPUT)** (pp. 6–7)
The auto scanning time can be controlled by an external timer.

⓲ **Timer output connector (TIMER OUTPUT)** (pp. 6–7)
Switching signal controlled by auto scanning time control ❸ is output.

⓳ **Camera-1 video signal output connector (CAMERA-1 OUTPUT)**
The video signal input to connector "1" of CAMERA INPUT ㉒ is output at all times.

⓴ **VTR video signal input connector (VTR-PLAY)**
The playback video signal from a recorder can be input for monitoring.

㉑ **VTR recording output connector (VTR-REC)**
The video signal selected automatically or manually is output.

㉒ **Video signal input connectors (CAMERA INPUT)**
Connect theTK-10 or TK-N10 exclusive video cameras (optional) here; other cameras cannot be connected.

㉓ **Power cable**
Connect to an AC outlet.

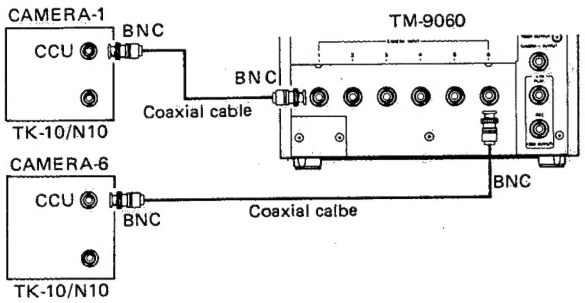
㉔ **Alarm input connectors (ALARM INPUT)** (p. 7)
The monitor enters the alarm mode when alarm signal is input.

㉕ **Alarm output connectors (ALARM OUTPUT)** (p. 7)
In the alarm mode, the alarm signal is output.

CONNECTIONS

- Be sure to connect the cameras with the monitor switched off, otherwise the protection circuit will operate and the cameras will not operate.
- Only TK-10 and TK-N10 video cameras can be used.
- It is not possible to insert anything (cable compensator, video distributor, etc.) between the monitor and video cameras because the power, video signal and genlock signal are multiplexed.

Connection to Exclusive TK-10 or TK-N10 Video Cameras

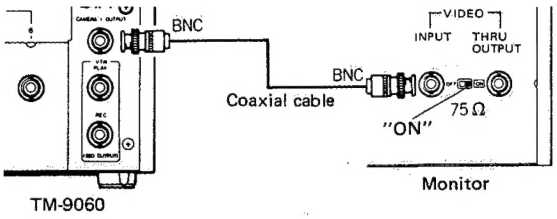


The maximum length of the coaxial cable depends on its thickness.

Coaxial cable size	Length
3C-2V(RG-59/u eqv.)	200 m
5C-2V	300 m
7C-2V(RG-11/u eqv.)	500 m

Note: Extension over 500 m is not possible even if a cable thicker than 7C-2V is used.

Connection to Additional Video Monitor



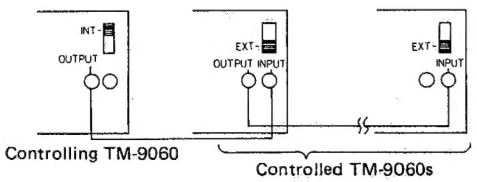
The CAMERA-1 video output can be connected to the video input of an additional video monitor via a coaxial cable.

Notes:
- Even when the monitor mode select switch of the TM-9060 is set to "ST/BY" or "VTR", the CAMERA-1 picture is always displayed on the additional video monitor.
- Only the CAMERA-1 picture is output.

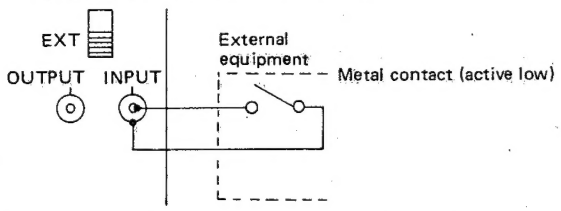
Connection of Timer Input/Output Connectors

- Use these connectors to switch pictures simultaneously on two or more TM-9060s.

(1) Select one TM-9060 to use its timer for the control of other TM-9060s. Set its TIMER SELECT switch to "INT" and those of other TM-9060s to "EXT".



(2) Connect as shown above using RCA-type pin plug cables.
- To operate timer from external equipment
  To switch pictures with a timing input from external equipment, connect as shown below.



Pictures are swithced in sequence every time the contact is closed.

Connection of Alarm Input/Output Connectors

- **ALARM INPUT connector**

The alarm input terminal operates by the make-contact with the grounding terminal when a door switch, telephone, chime, etc. is used as the alarm signal. Other conditions should conform to the following.

(1) The contact resistance (including the line resistance of connection cable) should be less than 500 ohms.

(2) The voltage supplied for the contact should be 12 V DC and max. current 1 mA.

Notes:
- Pin Nos. of the ALARM INPUT connector correspond to the pin Nos. of the CAMERA INPUT connectors.
- As the alarm input uses make contact, it should be separated before an alarm signal is input.
- When the video sensor camera is installed where people pass frequently during the day, unnecessary alarms can be prevented by installing another switch to keep the alarm input open during the daytime.

- **ALARM OUTPUT terminal**

The alarm signal is output in the following two cases.

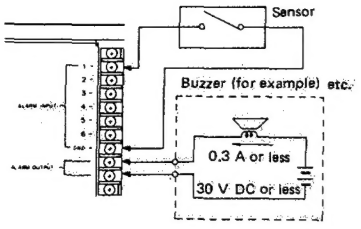
(1) When the alarm signal is input to the ALARM INPUT terminal.

(2) When the video sensor switch on the rear panel of the monitor is set to "ON" and there is movement within the video sensor area.

Note:
- The alarm signal is output in the above two cases regardless of the position of the monitor mode select switch.

The contact capacity of the alarm output is less than 30 V DC, 0.3 A.

An example of connection is shown on next page.



VIDEO SENSOR FUNCTION

The "video sensor" area can be set, by the user, within the picture shot by the camera. When any change or movement is detected in this area, the following three operations are activated automatically.

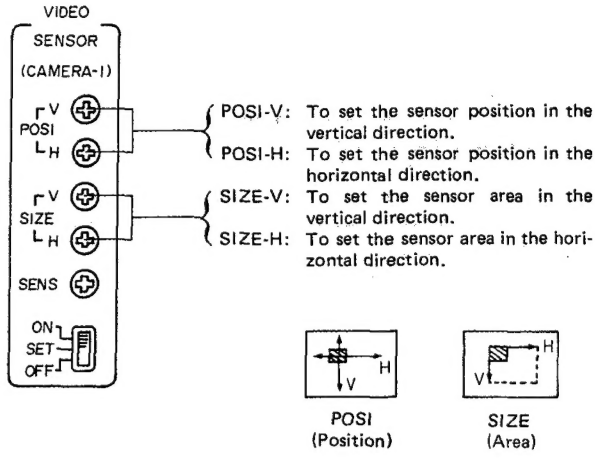
Operations in Alarm Mode

1. The picture from the camera connected to the CAMERA INPUT-1 connector appears on the screen.
2. The buzzer in the monitor rings.
3. An alarm signal is output from the ALARM OUTPUT terminal.

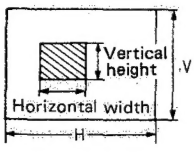
Notes:
- **The video sensor function operates only with the camera connected to the CAMERA INPUT-1 connector.**
- **The video sensor function is activated approx. 30 seconds after the power is switched on.**
- **The above operation is performed regardless of the position of the monitor mode select switch.**

Video Sensor Area Setting

1. Connect the TK-10 or TK-N10 video camera to the CAMERA INPUT-1 connector on the rear panel.
2. Set the POWER switch of the monitor to "ON".
3. Set the monitor mode select switch on the front of the monitor to "CAMERA".
4. Set the video sensor switch on the rear panel of the monitor to "SET".
5. A white square is displayed on the screen; this is the sensor area.
   Set the position and size as shown below.



- Setting the area (SIZE)
  The area can be set with the SIZE controls within:
  - 1/30 to 3/10 of the screen height.
  - 1/30 to 3/10 of the screen width.



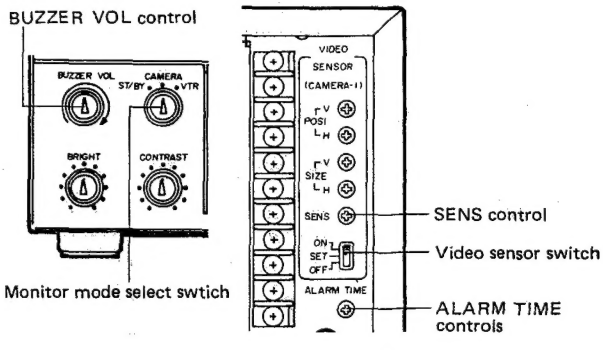
Perform following adjustment 6 while watching a moving object in the sensor operation area.

6. Set to the required sensor sensitivity with the SENS control.

Perform adjustments 7 and 8 while repeating the short-circuit and open condition between one of ALARM INPUT connectors 1 to 6 and the GND terminal.

7. Set the ALARM TIME control as required, between 8 seconds and 20 minutes (approx.). This is the duration for which the alarm mode is held.
8. Adjust the volume of the buzzer in the monitor with the BUZZER VOL control.

9. Set the video sensor switch to "ON". Now the video sensor area setting is completed.
- To release the alarm mode, press the AUTO button, press one of the manual switching buttons, or set the POWER switch to "OFF" then "ON" again.
- With the monitor mode select switch set to "ST/BY", the picture appears on the screen when the video sensor functions.



ALARM FUNCTION

When the external alarm signal is input via one of the ALARM INPUT terminals, the picture from the corresponding camera is displayed on the monitor for a time set by the ALARM TIME control, after which auto-scanning starts. This alarm mode is released when one of the manual switching buttons or the AUTO button is pressed.
When an external alarm signal is input to one of the ALARM INPUT terminals, the three operations of the alarm mode are activated as described on page 8.
For connection, refer to "Connection of Alarm Input/Output Connectors" on page 7.

Alarm Time and Buzzer Volume Setting

1. Input an external alarm signal.
2. The alarm time can be set to between 8 seconds and 20 minutes with the ALARM TIME control.
3. Adjust the BUZZER VOL control.
4. To release the alarm, press the AUTO button or one of the manual switching buttons, or set the POWER switch to "OFF" then "ON" again.

Notes:
- The alarm and video sensor functions can be used at the same time. To disable the video sensor function, set the video sensor switch on the rear of the monitor to "OFF".
- The alarm function starts operation approx. 30 seconds after power is switched on.

When a camera enters the alarm mode while another camera is already in the alarm mode after either the alarm or video sensor function has been activated, the subsequent operation has priority and the new picture is displayed.

DISPLAY IN ALARM MODE

A white square sign on the monitor screen and the lighting of a manual switching button lamp display the condition as shown below.

White square sign on the monitor screen

Video sensor Switch	Video sensor operation	External alarm operation
ON	Flashing	–
SET	Lighting	
OFF	–	

Lamp in a manual switching button

Video sensor Switch	Video sensor operation	External alarm operation
ON	Lighting	Flashing
SET	Lighting	Flashing
OFF	Lighting	Flashing

OPERATIONS

- Connect the video cameras, additional monitors, etc. as described on pages 6 and 7. Also connect the alarm input and output as required.
- When using the video sensor or alarm function, check its operation.

Note:
- When an alarm signal is input or when the video sensor is activated, these functions have priority on any other operations.

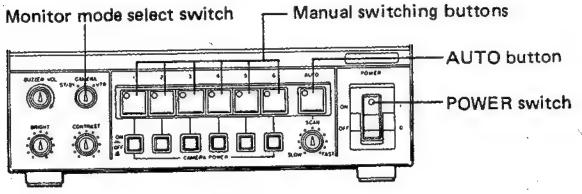
To Monitor Video Signal from TK-10 or TK-N10

1. Set the POWER switch of the monitor to "ON".
2. Set the CAMERA POWER switches of the cameras used to "ON".
3. Set the monitor mode select switch to "CAMERA".
4. To switch the cameras automatically, press the AUTO button. To switch the cameras manually, press the manual switching buttons.

Note:
- For operation of the video cameras, see the instructions provided with them.

To Monitor Only Alarm Condition

1. Set the POWER switch of the monitor to "ON".
2. Set the CAMERA POWER switches of the cameras used to "ON".
3. Set the monitor mode select switch to "CAMERA" and confirm that the picture is satisfactory.



4. Set the monitor mode select switch to "ST/BY". The picture will go off and only be displayed when an alarm is given.
5. To release the alarm mode, press the AUTO button or one of the manual switching buttons, or set the POWER switch to "OFF" then "ON" again.
6. During the alarm condition, picture is displayed only for the time set by the ALARM TIME control. To monitor the scene after it, operate as follows.
   1) Set the monitor mode select switch to "CAMERA".
   2) Press the manual switching button of the camera from which the alarm mode is activated.
7. To resume the original mode:
   1) Press the AUTO button.
   2) Set the monitor mode select switch to "ST/BY".

To Monitor Video Recorder Playback

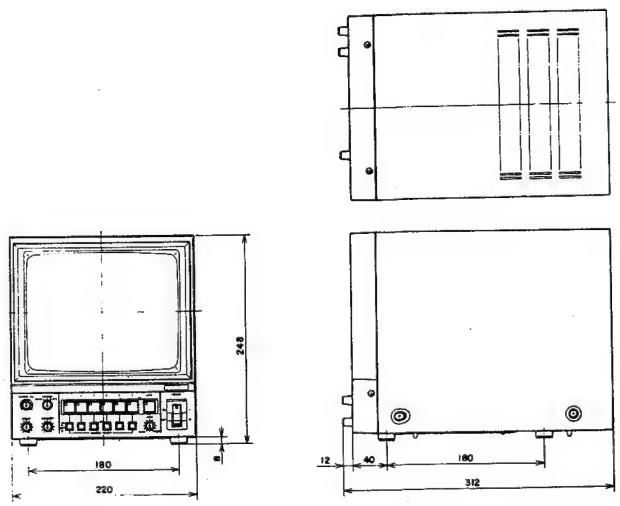
1. Set the POWER switch to "ON".
2. Set the monitor mode select switch to "VTR".
3. Play the recorder.

Note: • For operation of the video recorder, see the instructions provided with them.

SPECIFICATIONS

Horizontal resolution	: More than 900 lines (at center)
Scanning frequency	
Horizontal	: 15.75 kHz (U-type)/15.625 kHz (E-type)
Vertical	: 60 Hz (U-type)/50 Hz (E-type)
Inputs	
Camera	: x 6, TK-10/N10 only
VTR Playback	: 1 Vp-p (composite video signal), 75 ohms
Alarm	: x 6, contact low level (1 mA current flows in low level. 12 V is applied in high level.)
Timer	: Contact low level
Outputs	
Camera-1	: 1 Vp-p (composite video signal), 75 ohms
Alarm	: Make contact (metal), alarm time 8 sec to 20 min.
Timer	: Open-collector (low level)
Select	: x 6, open-collector (low level)
Video	: 1 Vp-p (composite video signal), 75 ohms
S/N	: 54 dB (w/o sync noise)
Power consumption	: 120 V AC 60 Hz, 103 W (including six video cameras, U-type) 220/240 V AC, 50/60 Hz 103 W (including six video cameras, E-type)
Ambient temperature range	: -10 to +40°C (14 to 104°F)
Weight	: 9.1 kg (20 lbs)

Dimensions (unit: mm)



Design and specifications subject to change without notice.

JVC

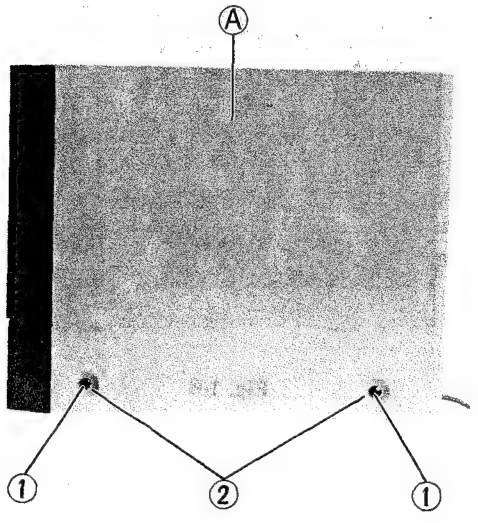
VICTOR COMPANY OF JAPAN, LIMITED

Printed in Japan
SC96177

SECTION 1
DISASSEMBLY

1.1 REMOVING THE TOP COVER

1. Remove four screws (1) and four washers (2) , then remove the top cover (A) .



Fug. 1-1

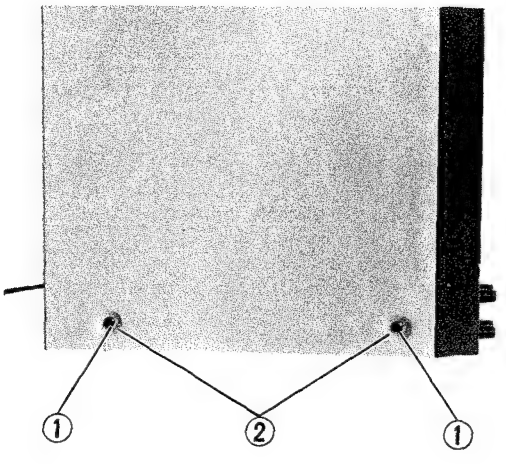


Fig. 1-2

1.2 FUSE REPLACEMENT

Before replacing a fuse, the reason why it blew should be investigated to prevent trouble from spreading. The malfunction should be repaired before replacing the fuse.

1. Before replacing the fuse (B) , set the Power switch OFF or disconnect the power cord from the AC outlet.

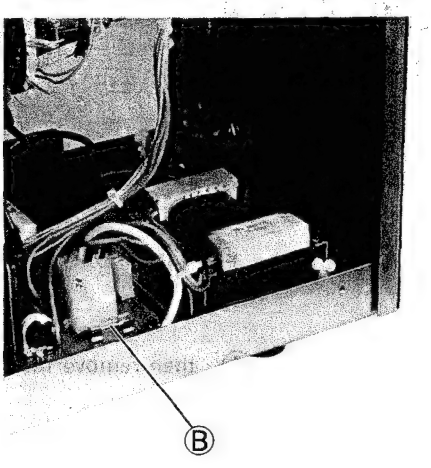


Fig. 1-3

2. For the protection of the camera and for your safety, replace with a fuse with the specified part number.

TM-9060 (U type) : QMF51J1-1R6; 1.6 A – 125 V
" (E type) : QMF51A2-R80; T800 mA – 250 V
TM-9010 (U type) : QMF51J1-R80; 800 mA – 125 V
" (E type) : QMF51A2-R63; T630 mA – 250 V

1.3 REMOVAL OF PRINCIPAL CIRCUIT BOARDS

1.3.1 Removing the MON board

1. Remove two screws ③ and bottom plate Ⓒ .

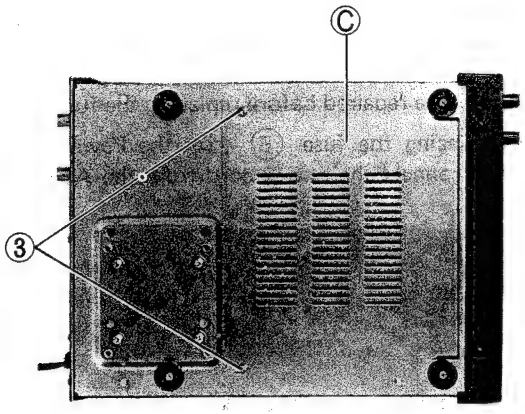


Fig. 1-4

2. Remove four screws ④ , then remove the MON board Ⓓ .

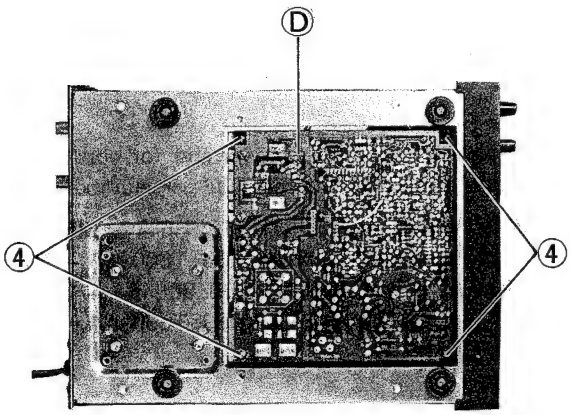


Fig. 1-5

1.3.2 Removing the ASB board (for TM-9060)/ Removing the CMD board (for TM-9010)

1. Remove the cover according to 1.1.
2. Remove four screws ⑤ , then remove the circuit board Ⓔ .

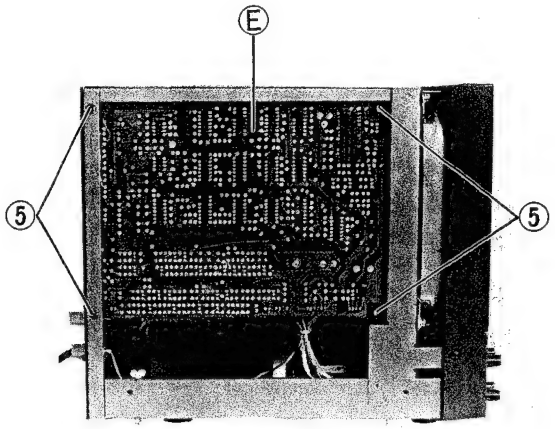


Fig. 1-6

1.3.3 Removeing the CBB board

1. Remove four screws (6) and four washers (7), then the rear panel (F), open as in Fig. 1-8.

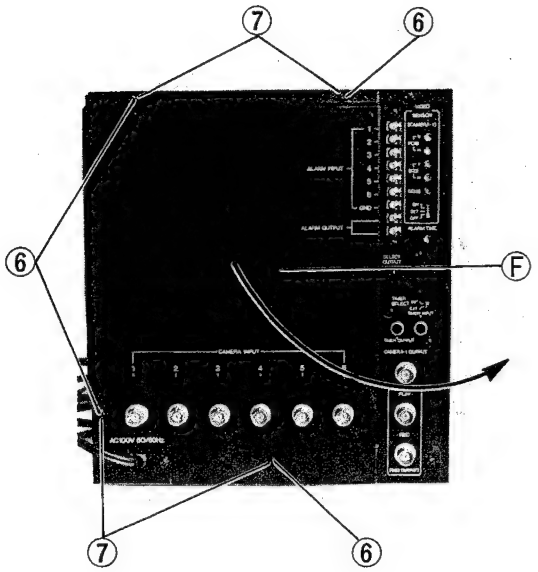


Fig. 1-7

2. Remove two screws (8), then remove the CBB board (G).

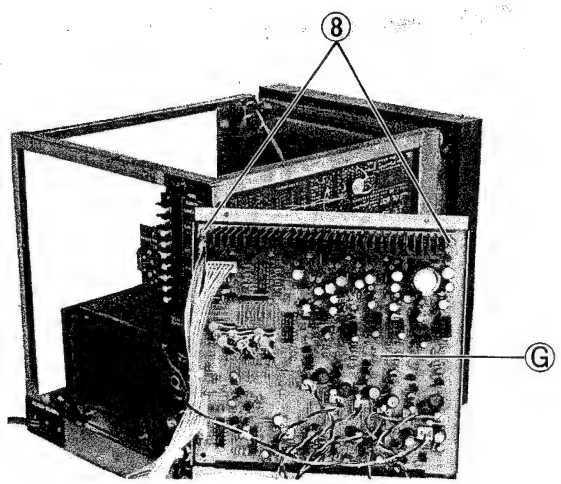


Fig. 1-8

1.4 REMOVING THE CRT

- Remove the top cover according to 1.1.

1. Remove four screws (9) and front panel (H).

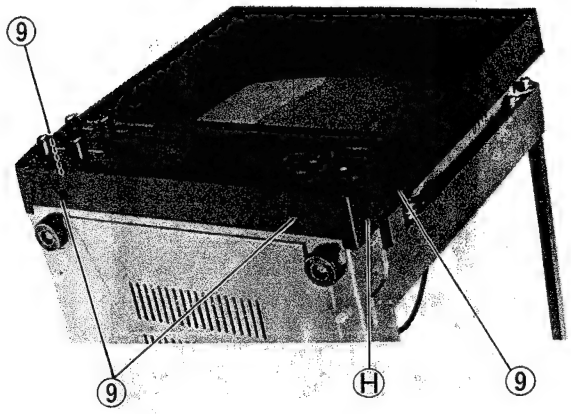


Fig. 1-9

2. Remove four screws (10) and front cover (I).

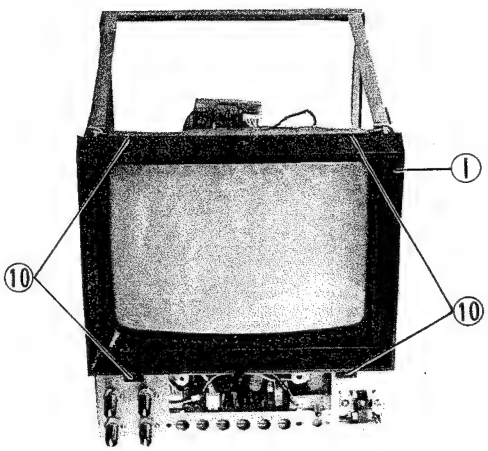


Fig. 1-10

3. Remove four screws (11) , then remove the CRT (J) .

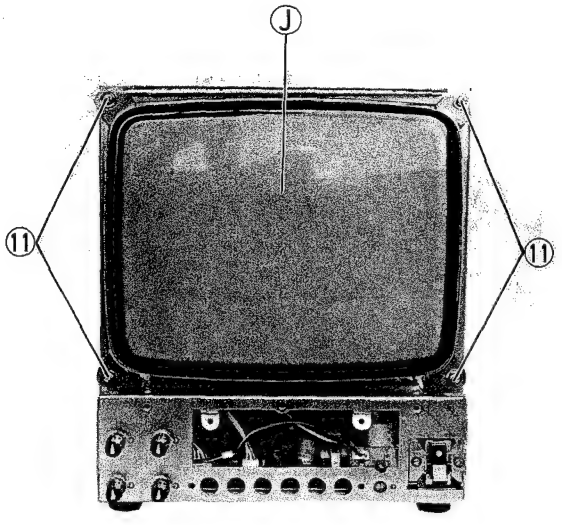


Fig. 1-11

1.5 REMOVING THE TRANSFORMER

1. Remove four screws (12) , then remove the transformer (K) .

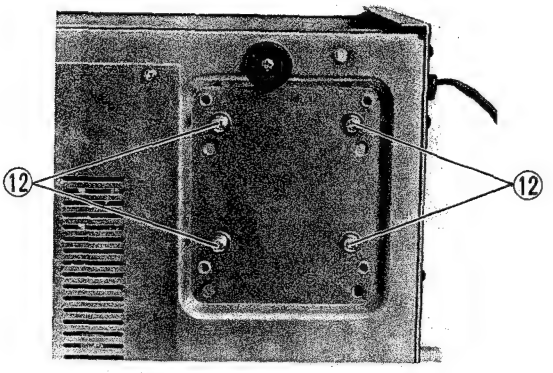


Fig. 1-12

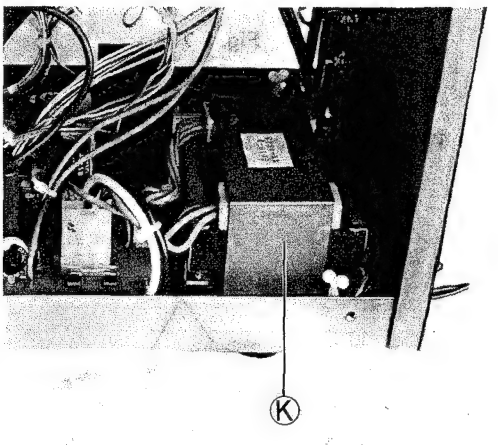


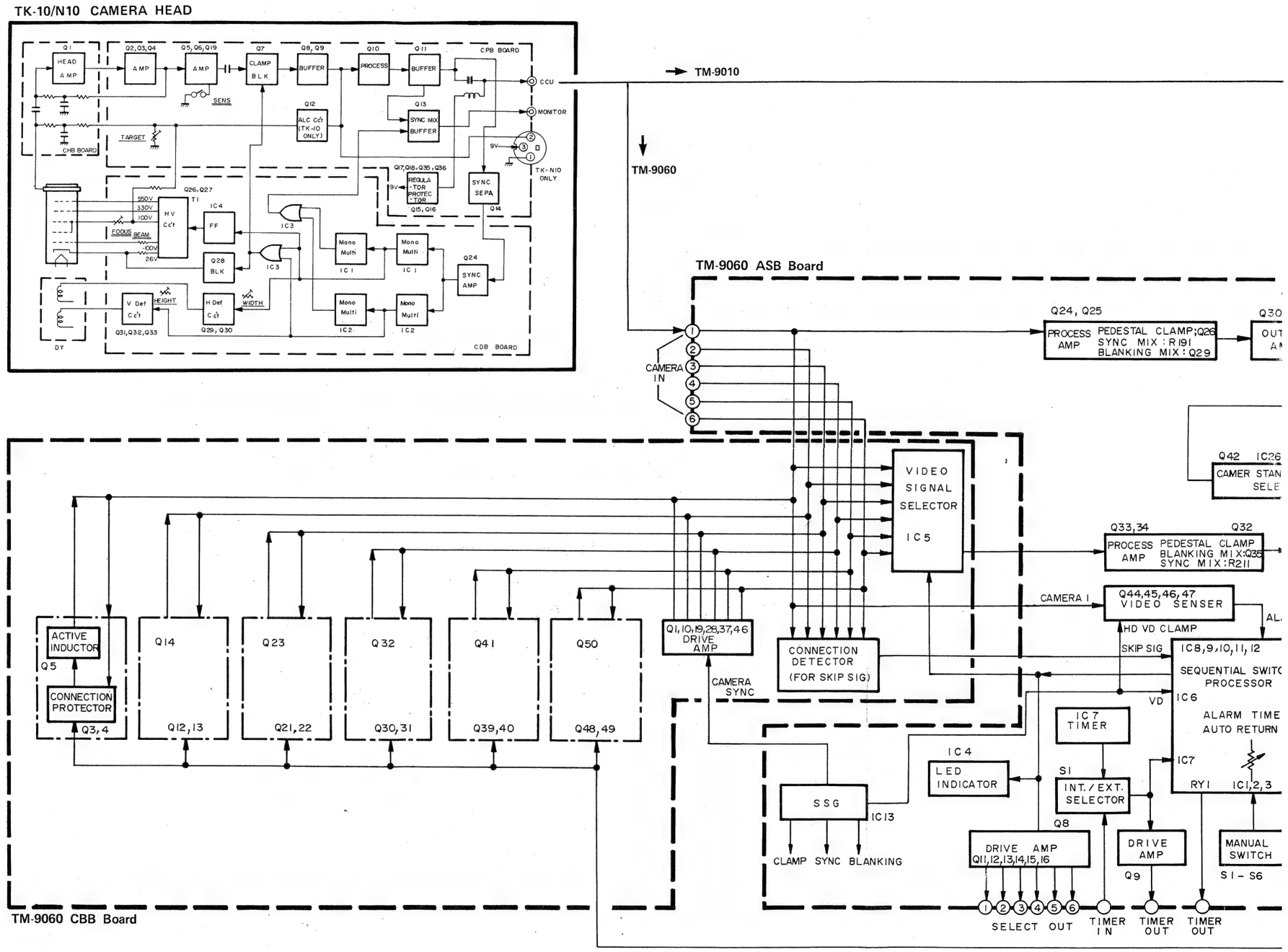
Fig. 1-13

– TM-9060/9010 parts list –

Symbol No.	Part No.	Part Name	Description
1	SC20198-001	Front Cover	
2	SC20199-002	Control Panel	for TM-9010
3	SC20200-001	Control Panel	for TM-9060
4	SC41996-001	Knob	
5	" -002	"	for TM-9060
6	SC30654-208	Push Switch	for " (MANUAL 1 – 6)
7	" -206	"	for " (AUTO)
8	SC20201-001	Panel Base	
9	QVG4A2B-013V	VR	1 K BRIGHT
10	" -023V	"	2 K CONTRAST
11	" -024V	"	20 K BUZZER VOL.
12	QSR4522-202	Rotaly Switch	for TM-9010 (ST-BY/CAMERA)
	QSR4523-202	"	for TM-9060 (ST-BY/CAMERA/VTR)
13	QST3641-S01	Push Switch	for " (CAMERA POWER)
14	Not Available	LED Board Ass'y	for TM-9010
15	GL-5PR5	LED	for "
16	QVG4A2B-055	VR	500 K SCAN, for TM-9060
17	SC10053-001	Chassis	
18	SC30637-001	Bottom Plate	
19	Not Available	MON Board Ass'y	
⚠ 20	SCV0724	Power Trans	U-version, for TM-9010
⚠	SCV0725	"	E-version, for "
21	SCV0722	"	U-version, for TM-9060
	SCV0723	"	E-version, for "
22	QWX102-230	Braided Wire	
23	55246	Spring	
⚠ 24	230BTB4	CRT	
⚠ 25	SCV0720	DEF. Yoke Ass'y	
⚠ 26	SCV0036-001	CRT Socket	
27	SC20206-001	Cover	
28	SC20204-001	Rear Panel	for TM-9010
29	SC30651-001	Rear Cover (A)	for TM-9060
30	SC20205-001	" (B)	for "
31	SS30686-002	PCB Holder	for "
32	Not Available	CBB Board Ass'y	for "
33	SC42003-009	Connector Board	for "
34	PU48567-001	BNC Connector	
35	SC41971-006	Plate	U, EK, EA-version EG-version -007
⚠ 36	QMP1120-244K	Power Cable	U-version
⚠	QMP4208-250	"	EG-version
⚠	QMP9020-006-BS	"	EK-version
⚠	SCV0398-001	"	EA-version
37	QHS8391-162-BS	Bushing	U, EK, EA-version EG-version QHS6374-162
38	Not Available	CMD Board Ass'y	
39	SC41972-001	Plate	
40	QMC0889-005	Socket	8-pin
41	SSV0454	RCA Receptacle	
42	SBST3006Z	Screw	M3 x 6
43	SBST3006M	"	M3 x 6
44	SDSP3006M	"	M3 x 6
45	SDSP4008M	"	M4 x 8
46	DPSP4008Z	"	M4 x 8
47	SBSF3008M	"	M3 x 8
48	SSSP3006Z	"	M3 x 6
49	SBSF3008M	"	M3 x 8
50	SDST3010M	"	M3 x 10
51	LPSP4008Z	"	M4 x 8
52	E47227-006	Rubber Foot	
53	SS42503-00A	Washer	
54	Q03091-114	"	
55	Q03093-406	Washer	
56	SC41964-001	Spacer	
57	SC41965-001	"	
⚠ 58	SCV0428-002	Power Switch	U-version
⚠	SCV0204-002	"	E-version
59	SBST3008M	Screw	M3 x 8
60	SC42610-001	Cushion	

SECTION 5
DIAGRAMS AND CIRCUIT BOARDS

5.1 TM-9060/9010 BLOCK DIAGRAM



H I J K L M N O P

TM-9010 CMD Board

CAMERA INPUT

Q11,12 VIDEO AMP

Q13 - 17 PROCESS AMP

Q18 BUFFER AMP

CAMERA OUTPUT

IC1,2,3 Q10,20-25 SSG FREQ

Q1 - 9 PROTECTOR Cc't

Q19 BUFFER AMP

ALARM INPUT

ALARM Cc't

IC4 - 18 Q26 - 28

ALARM OUTPUT

ASB BOARD

)24, Q25

ROCESS AMP PEDESTAL CLAMP;Q26 SYNC MIX : R191 BLANKING MIX : Q29

Q30 OUTPUT AMP

CAM-1 OUTPUT

TM-9010

TM-9060

CAMERA/ST-BY

TM-9010

CRT

TM-9060

Q42 IC26 Q38 CAMER STAND-BY VTR SELECTOR: Q39

VTR INPUT

Q9,10 SUB BRIGHT

SUB BRIGHT

Q33,34 Q32 PROCESS AMP PEDESTAL CLAMP BLANKING MIX:Q36 SYNC MIX:R211

Q37 OUTPUT AMP

REC OUTPUT

Q3,4 VIDEO AMP

CLAMP/BLK MIX Q5 - 8

Q11 OUTPUT AMP

CONTRAST

BRIGHT IC 2

H HOLD

T2

FOCUS

Q44,45,46,47 VIDEO SENSER

ALARM SIG

HD VD CLAMP

SKIP SIG

IC8,9,10,11,12 SEQUENTIAL SWITCHER PROCESSOR IC6

Q1 Q2 Q3 Q4 Q5 Q6

ALARM IN

Q2 SYNC SEPA

HOR. DEF Cc't

HV Cc't

IC3 VERT. DEF Cc't

DY

VD

IC7 TIMER

ALARM TIME AUTO RETURN TIME

IC7 RY1 IC1,2,3 IC10

AUTO INPUT

V HOLD

HEIGHT

LINEARITY

INT./EXT. SELECTOR

D20 RECTIFIER

IC3,Q13-15 VOLTAGE REGULATOR

12V ADJ

12 V

DRIVE AMP Q9

MANUAL SWITCH S1 - S6

AUTO SWITCH S7

RECTIFIER RIPPLE FILTER D21

MON BOARD

ABS BOARD

TIMER IN

TIMER OUT

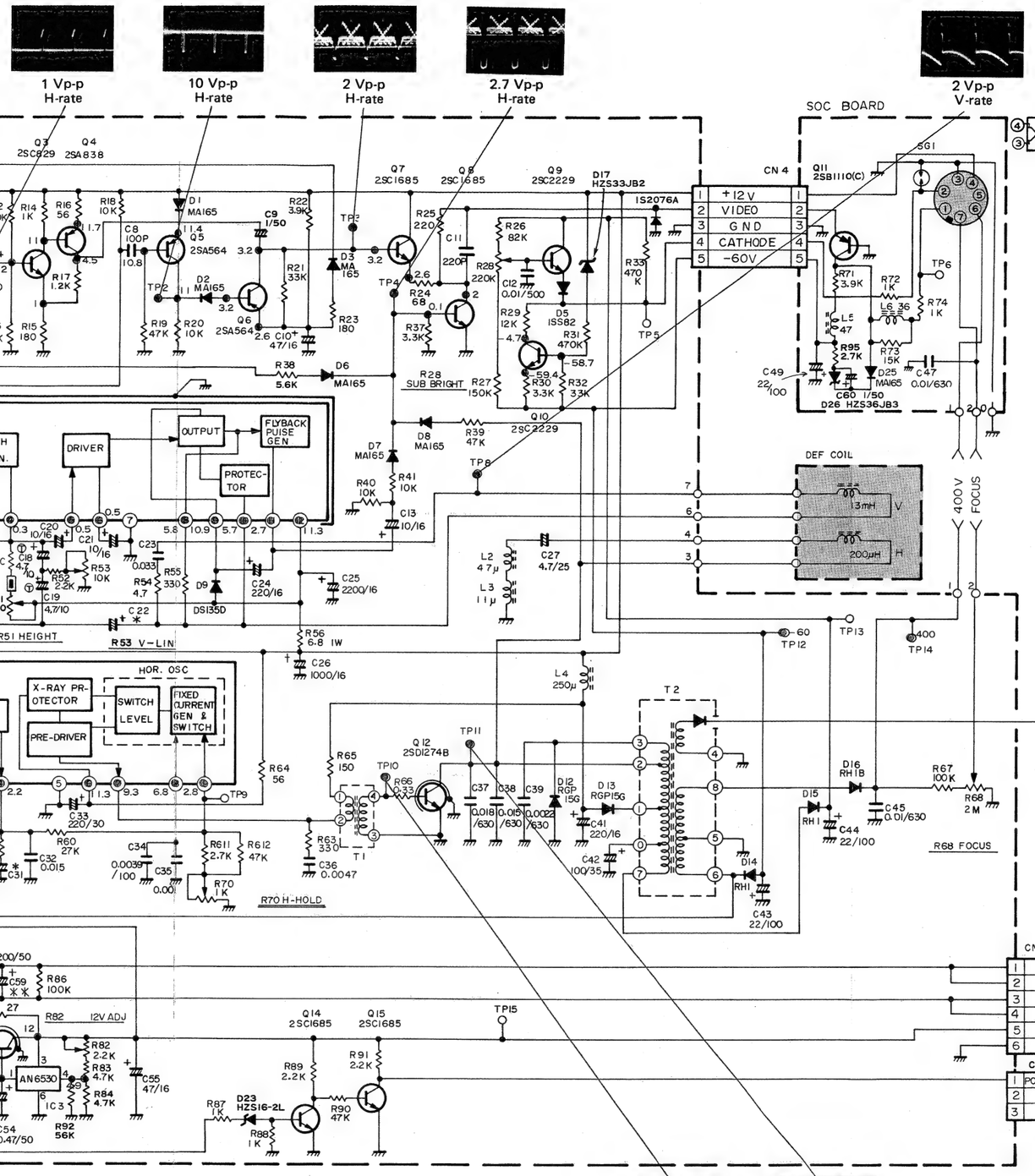
TIMER OUT

TM-9060/TM-9010 MON Board

5-1 BLOCK DIAGRAM (MON SCHEMA. & BOARD)

5.2 MON BOARD SCHEMATIC DIAGRAM (with BCW/SOC/LEW boards)

(Common board for TM-9060 and TM-9010)

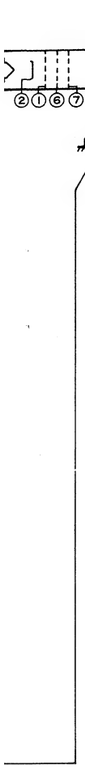


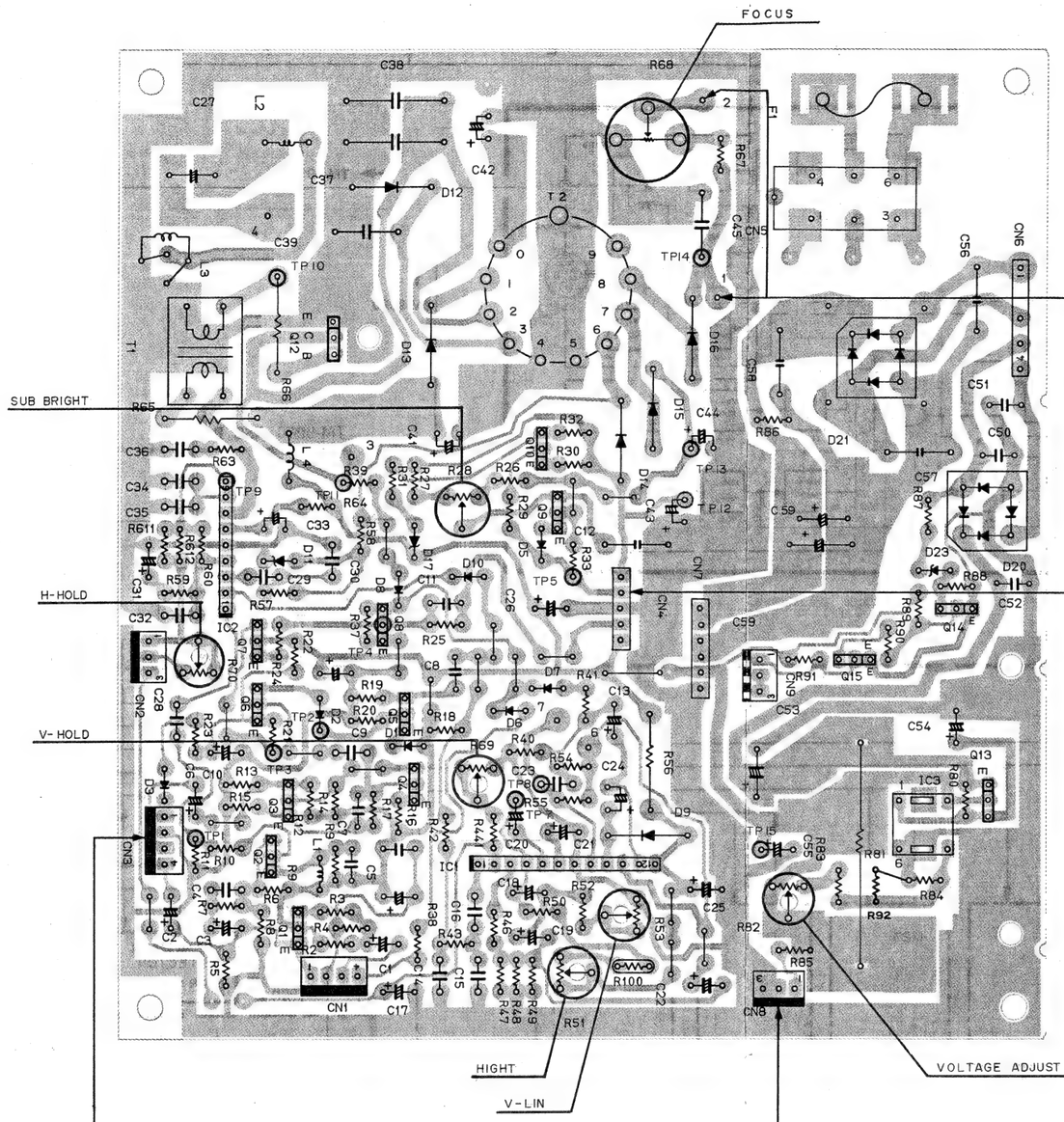
NOTE : *

AC LINE INPUT	C N 5		FUSE(F1)		R50	R441	C 22	C31	R59
	1 PIN	3 PIN	TM-9060	TM-9010					
100 V	RED WIRE	ORANGE WIRE	1.6A/ 125V	800mA/125V	68K	47 K	470/10	4.7/50	3.3K
120 V	ORANGE WIRE	RED WIRE							
220 V	GREY WIRE	BLUE WIRE	T800mA/250V	T630mA/250V	68K	68 K	1000/10	10/50	6.8K
240 V	BLUE WIRE	GREY WIRE							

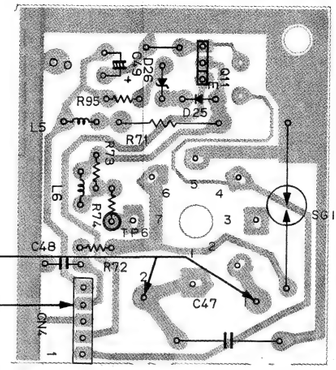
5.3 MON CIRCUIT BOARD (with SOC/BCW/LEW board)

– MON BOARD –

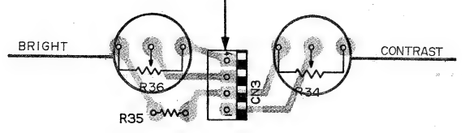




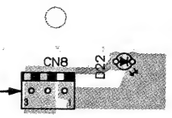
– SOC BOARD –



– BCW BOARD –



– LEW BOARD –



*TM-9060 ONLY TO C BB BOARD

CN7 ⇨ CN7

CN7
+35 V
+35 V
G N D
G N D
+12 V
G N D

CN9 ⇨ CN19 *TM-9060 ONLY TO ASB BOARD

CN9
POWER DOWN DET.
N C
N C

5.4 CBB BOARD SCHEMATIC DIAGRAM (with HIC/PSB board)

– TM-9060 only –

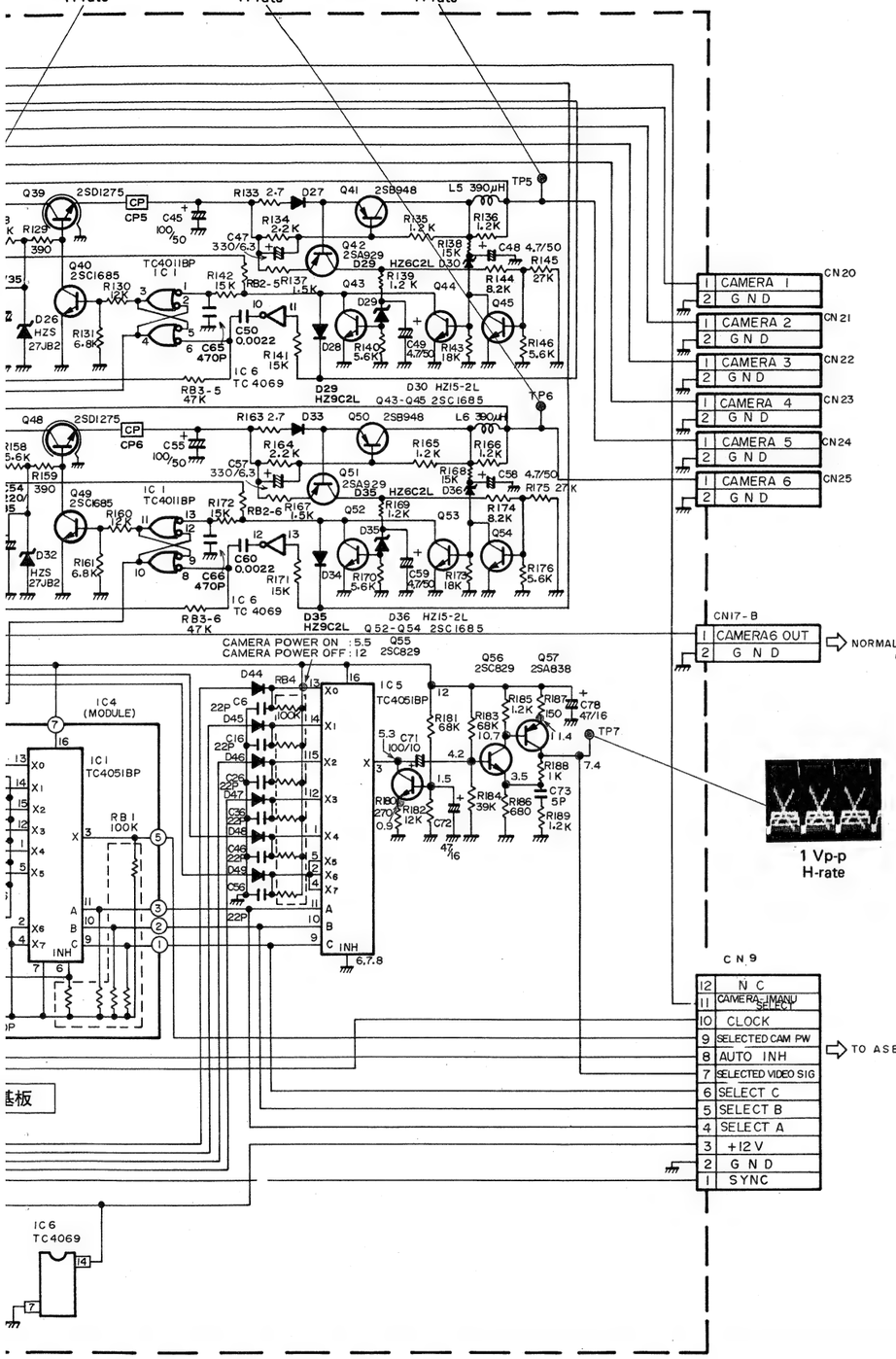
CAMERA POWER SW
CN16
S1
RB1 15K
Q1 2SA929
Q2 2SC1685
Q3 2SD1275
Q4 2SC1685
Q5 2SB948
Q6 2SA929
Q7–Q9 2SC1685
Q10 2SA929
Q11 2SC1685
Q12 2SD1275
Q13 2SC1685
Q14 2SB948
Q15 2SA929
Q16–Q18 2SC1685
Q19 2SA929
Q20 2SC1685
Q21 2SD1275
Q22 2SC1685
Q23 2SB948
Q24 2SA929
Q25–Q27 2SC1685
Q28 2SA929
Q29 2SC1685
Q30 2SD1275
Q31 2SC1685
Q32 2SB948
Q33 2SA929
Q34–Q36 2SC1685
Q37 2SA929
Q38 2SC1685
Q39 2SD1275
Q40 2SC1685
Q41 2SB948
Q42 2SA929
Q43–Q45 2SC1685
Q46 2SA929
Q47 2SC1685
Q48 2SD1275
Q49 2SC1685
Q50 2SB948
Q51 2SA929
Q52–Q54 2SC1685
Q55 2SC829
Q56 2SC829
Q57 2SA838
TR1
TP1
TP2
TP3
TP4
TP5
TP6
TP7
CP1
CP2
CP3
CP4
CP5
CP6
D1–D6 MA165
D5I DS135
D6 HZ15-2L
D8 HZS 27JB2
D12 HZ15-2L
D18 HZ15-2L
D24 HZ15-2L
D29 HZ9C2L
D30 HZ15-2L
D35 HZ9C2L
D36 HZ15-2L
D50
IC1 TC4051BP
IC2 TC4011BP
IC3 TC4011BP
IC4 (MODULE)
IC5 TC4051BP
IC6 TC4069
IC 1,2,3 TC4011
IC6 TC4069
CN17-A
TO ASB BOARD (CN17)
CAMERAI OUT
G N D
CN18
TO ASB BOARD (CN18)
CAMERAI OUT
G N D
CN7
TO TC MON BOARD (CN7)
+35V
+35V
G N D
G N D
+12V
G N D
CAMERA POWER ON : 5.5
CAMERA POWER OFF : 12
CAMERA POWER ON : 12
CAMERA POWER OFF : 0
HIC 基板

5-3 CBB SCHEMA. & BOARD (ASB SCHEMA.)
Revised on sep. 1989.

1 Vp-p H-rate

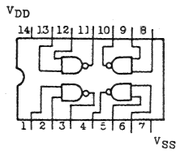
1 Vp-p H-rate

1 Vp-p H-rate

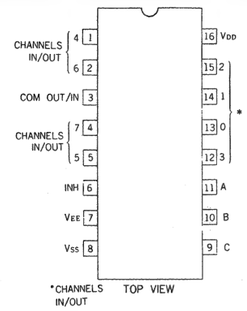


1 Vp-p H-rate

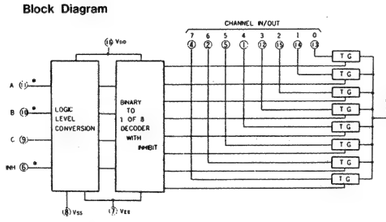
***TC4011BP**
(Quad 2-input Positive NAND Gate)
[TOSHIBA]



***TC4051 (Single 8-channel Multiplexer/Demultiplexer) [TOSHIBA]**



Block Diagram

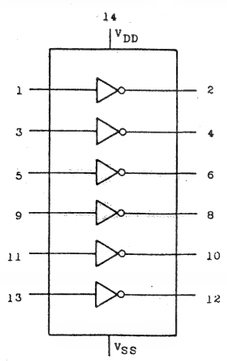


TRUTH TABLE

INPUT STATES				"ON" CHANNEL(S)
INHIBIT	C	B	A	
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	X	X	X	NONE

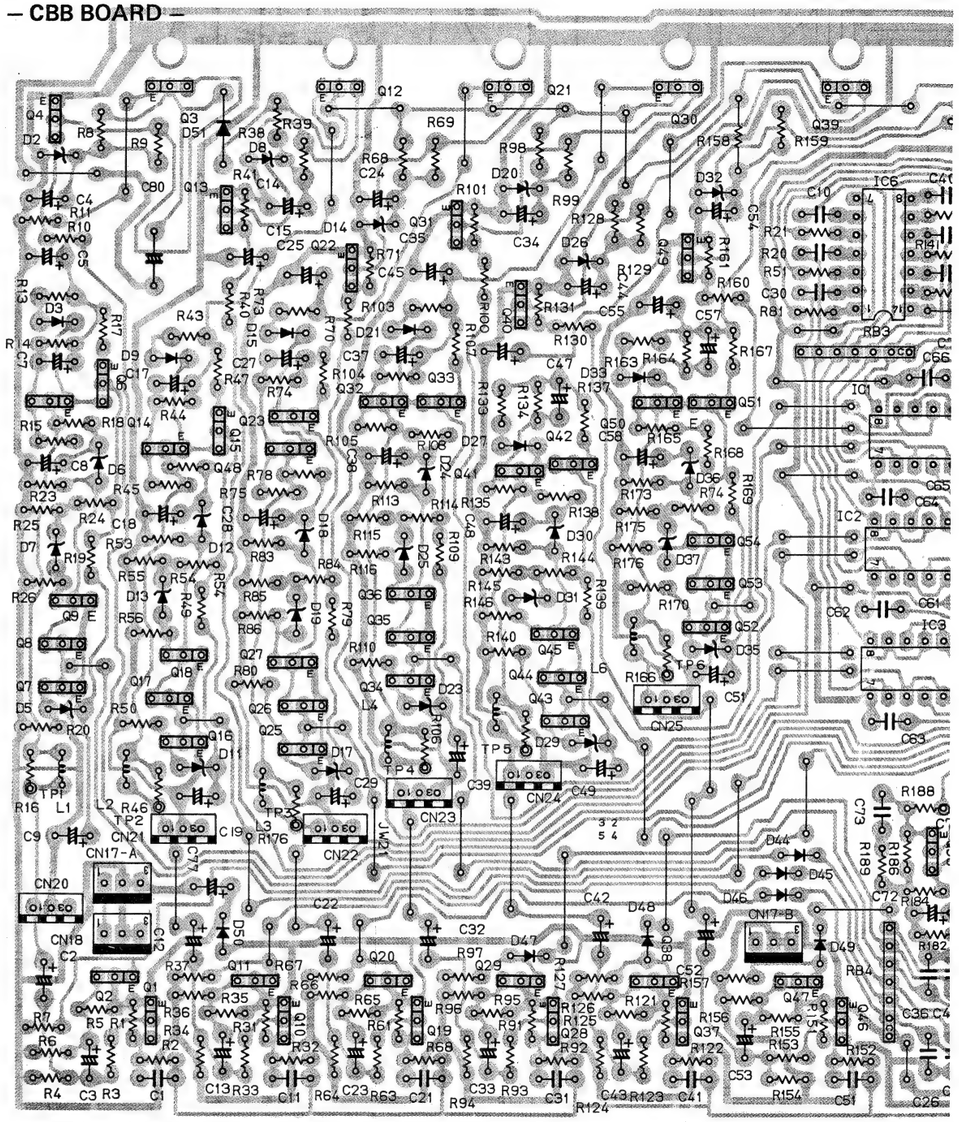
X = Don't care

***TC4069 (Hex Inverter) [TOSHIBA]**



5.5 CBB CIRCUIT BOARD (with PSB/HIC board) (TM-9060 only)

– CBB BOARD –

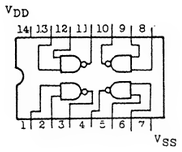


Revised on sep. 1989.

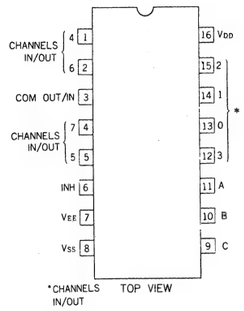
5-3 CBB SCHEMA. & BOARD (ASB SCHEMA.)

5.5 CBB CIRCUIT BOARD (with PSB/HIC board)
(TM-9060 only)

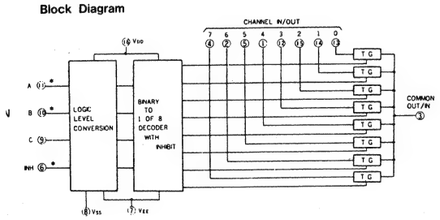
***TC4011BP**
(Quad 2-input Positive NAND Gate)
[TOSHIBA]



[Single 8-channel Multiplexer/Demultiplexer) [TOSHIBA]



Block Diagram

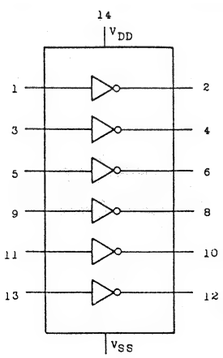


TRUTH TABLE

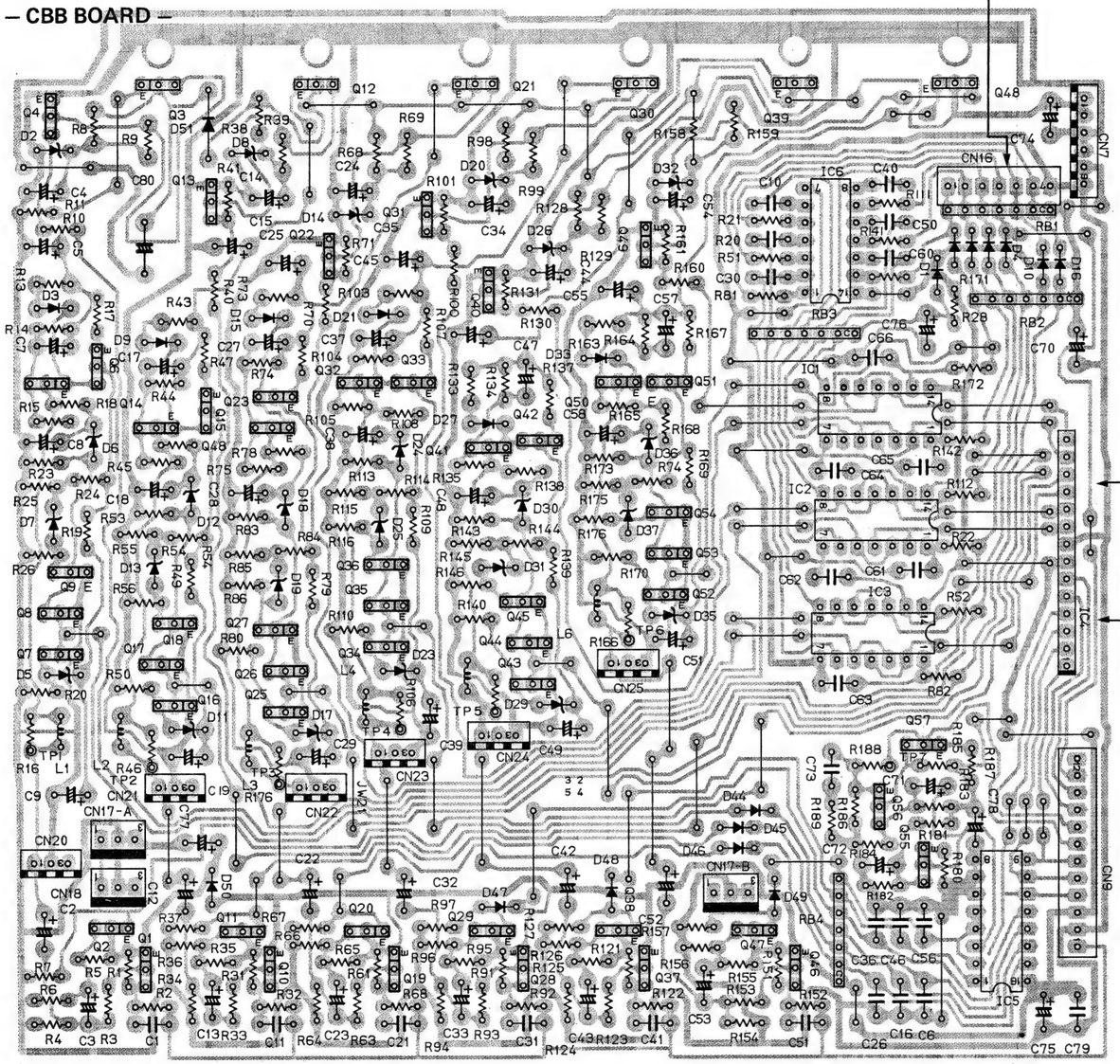
INPUT STATES				"ON" CHANNEL(S)
INHIBIT	C	B	A	
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	X	X	X	NONE

X = Don't care

***TC4069 (Hex Inverter) [TOSHIBA]**

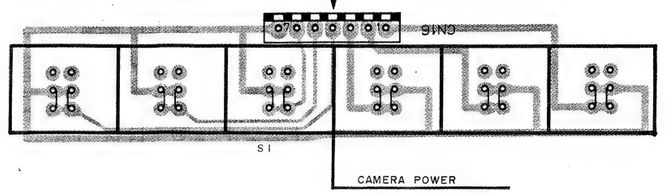


— CBB BOARD —



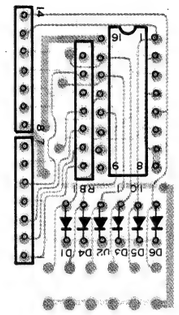
WIRING

— PSB BOARD —



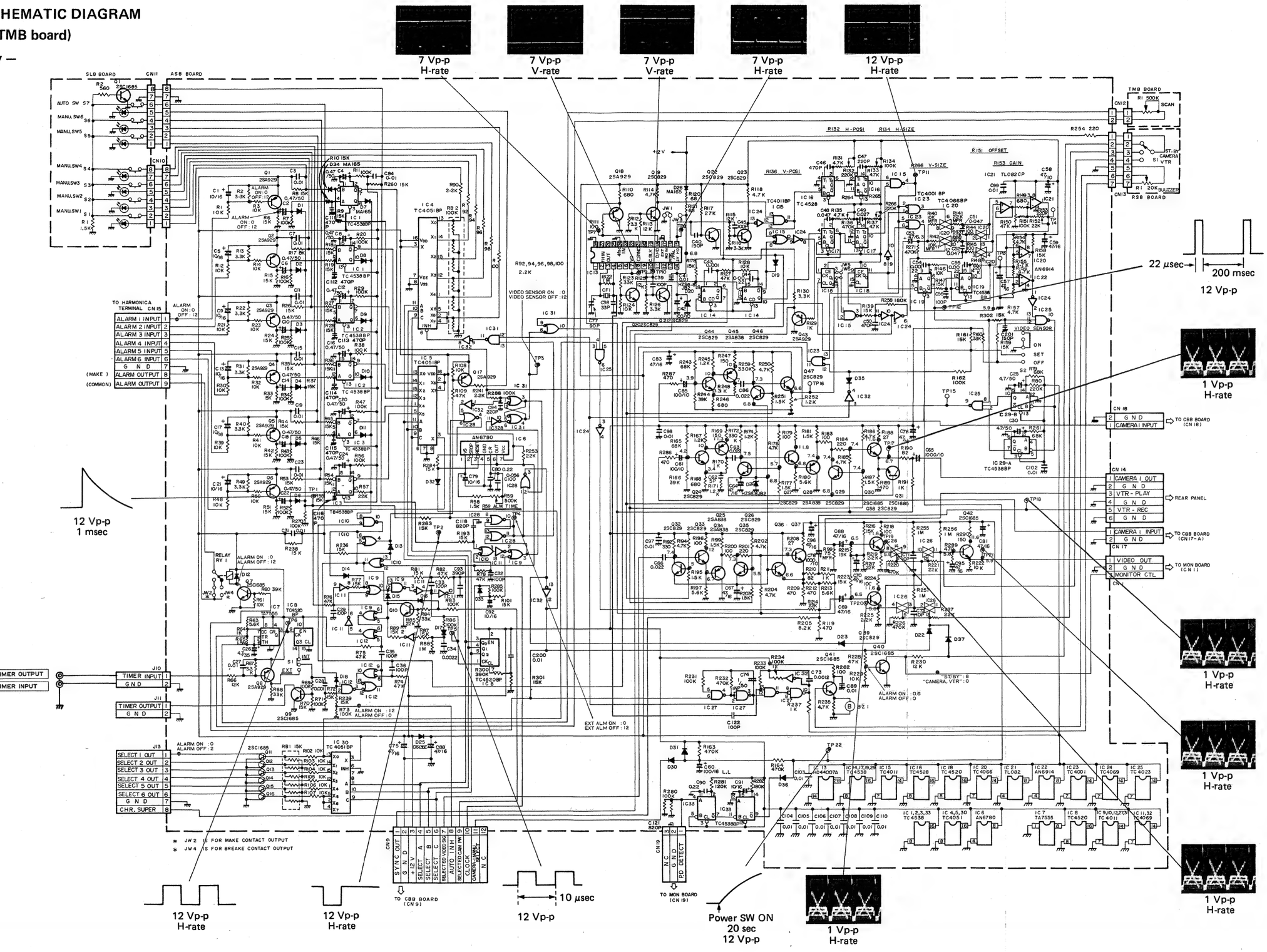
WIRING

— HIC BOARD —



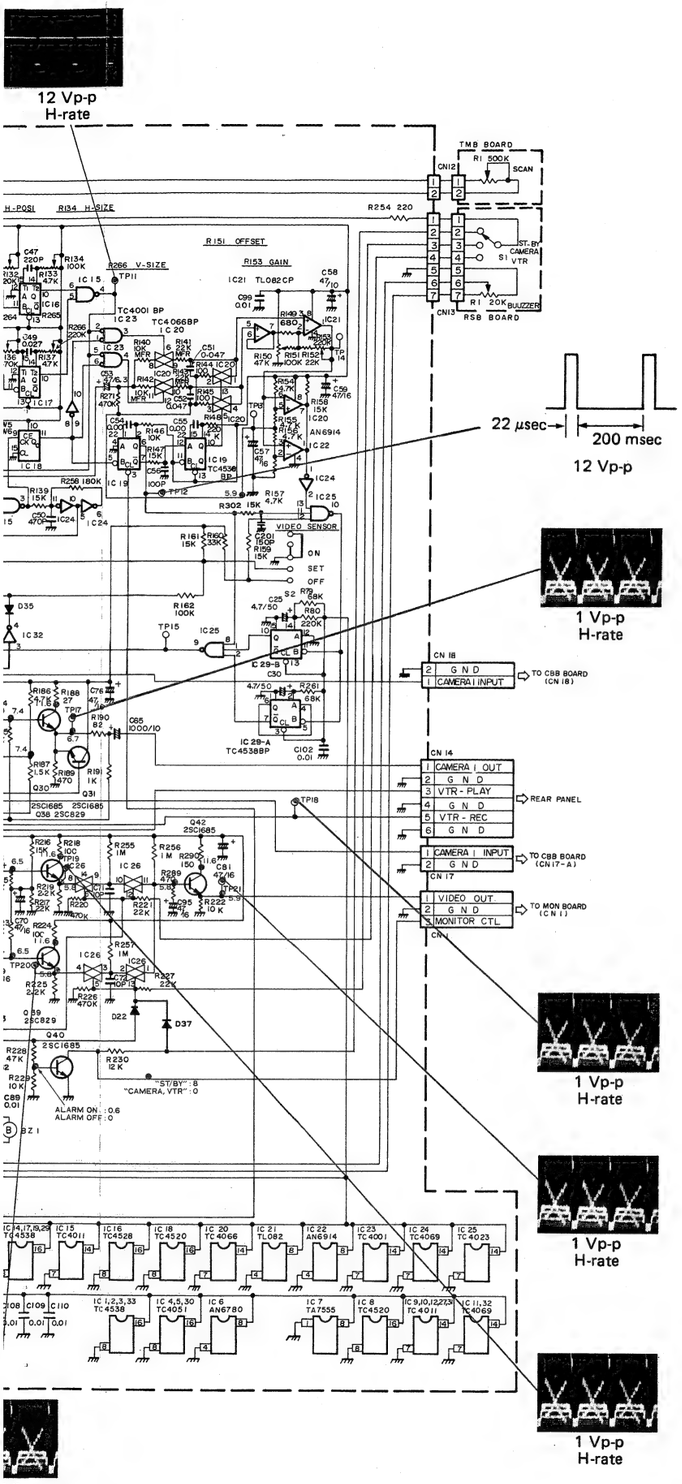
5-3 CBB SCHEMA. & BOARD (ASB SCHEMA.)
SCHEMA. & BOARD (ASB SCHEMA.) 5-3

5.6 ASB BOARD SCHEMATIC DIAGRAM
(with SLB/RSB/TMB board)
— TM-9060 only —

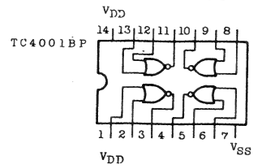


ASB SCHEMA. (CBB SCHEMA. & BOARD) 5-4

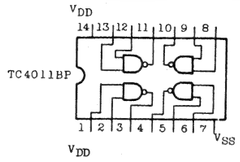
5-4 ASB SCHEMA. (CBB SCHEMA. & BOARD)



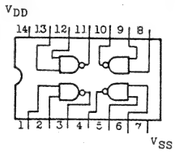
*TC4001 (Quad Positive NOR Gate) [TOSHIBA]



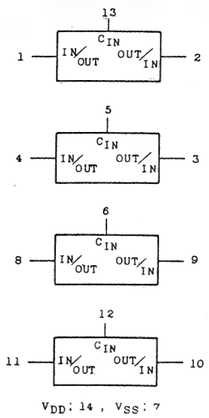
*TC4011 (Quad Positive NAND Gate) [TOSHIBA]



*TC4023 (Quad Positive NAND Gate) [TOSHIBA]

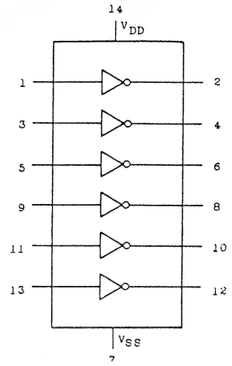


*TC4066 (Quad Bilateral Switch) [TOSHIBA]

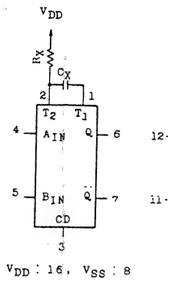


C_{IN}	Impedance Between IN/OUT -- OUT/IN ※
H	0.5 ~ $5 \times 10^2\ \Omega$
L	$10^9\ \Omega$

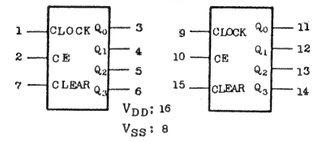
*TC4069 (Hex Inverter) [TOSHIBA]



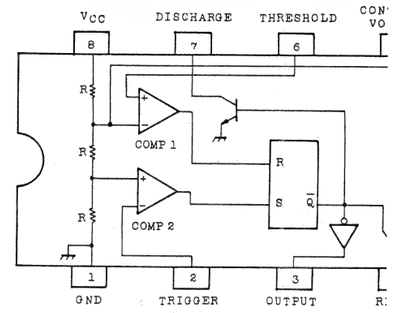
*TC4538 (Rese



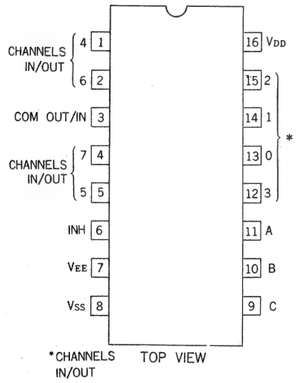
*TC4520 (Dual Binary up counter) [TOSHIBA]



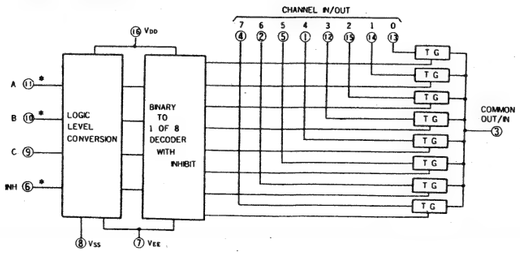
*TA7555 (Pulse Generator) [TOSHIBA]



*TC4051 (Single 8-Channel Multiplexer/Demultiplexer) [TOSHIBA]



Block Diagram

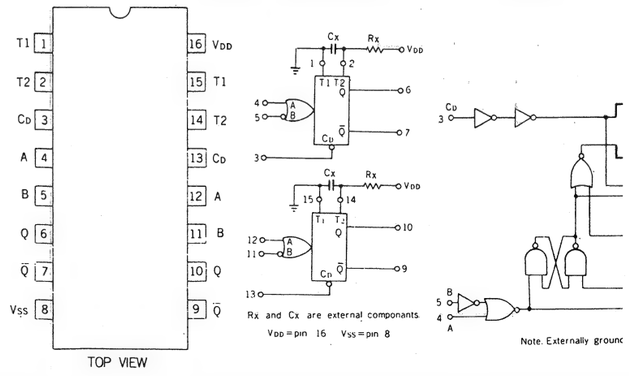


TRUTH TABLE

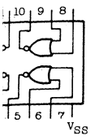
INPUT STATES				"ON" CHANNEL(S)
INHIBIT	C	B	A	
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	X	X	X	NONE

X = Don't care

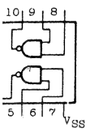
*TC4528 (Dual MONO Multivibrator) [TOSHIBA]



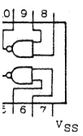
Gate) [TOSHIBA]



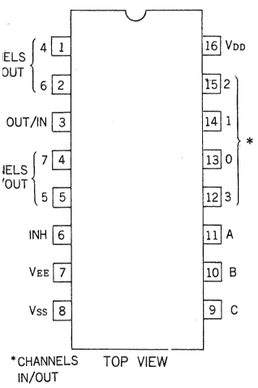
) Gate) [TOSHIBA]

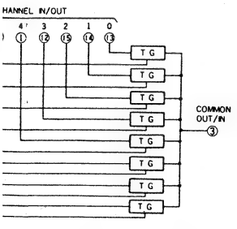


) Gate) [TOSHIBA]

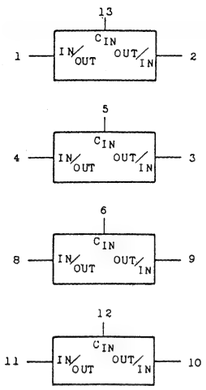


nel Multiplexer/Demultiplexer) [TOSHIBA]





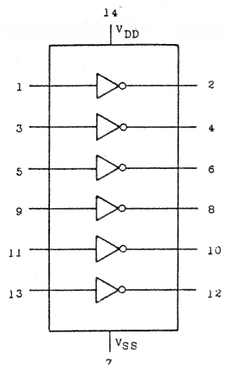
*TC4066 (Quad Bilateral Switch) [TOSHIBA]



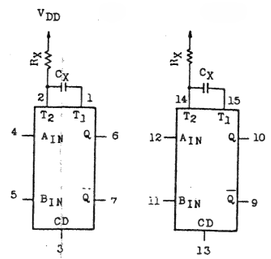
V_{DD}: 14 , V_{SS}: 7

C_{IN}	Impedance Between IN/OUT -- OUT/IN ※
H	0.5 ~ 5×10^2 Ω
L	10^9 Ω

*TC4069 (Hex Inverter) [TOSHIBA]



*TC4538 (Resettable MONO Maltivibrator) [TOSHIBA]

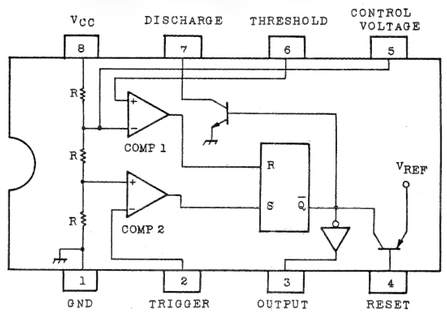


V_{DD} : 16, V_{SS} : 8

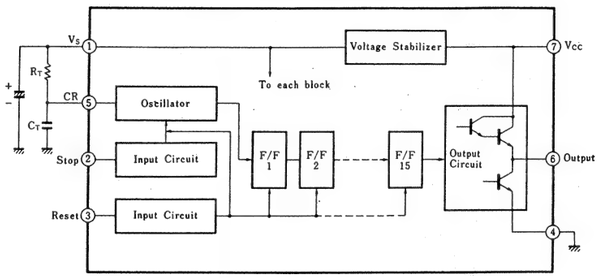
INPUT			OUTPUT		NOTE
A_{IN}	B_{IN}	CD	Q	$\bar{Q}$	
∫	H	H	⊓	⊔	OUTPUT ENABLE
∫	L	H	L	H	INHIBIT
H	⊐	H	L	H	INHIBIT
L	⊐	H	⊓	⊔	OUTPUT ENABLE
※	※	L	L	H	INHIBIT

※ Don't Care

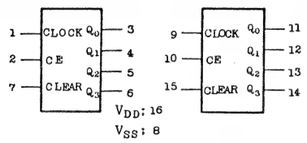
*TA7555 (Pulse Generator) [TOSHIBA]



*AN6780 (Timer) [MATSUSAITA]

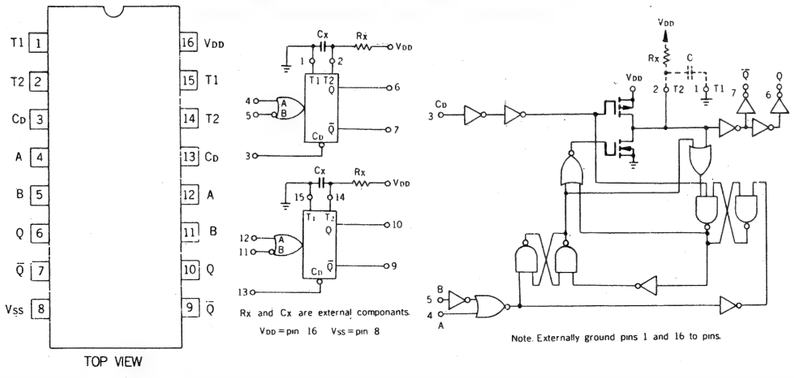


*TC4520 (Dual Binary up counter) [TOSHIBA]



V_{DD}: 16
V_{SS}: 8

*TC4528 (Dual MONO Multivibrator) [TOSHIBA]



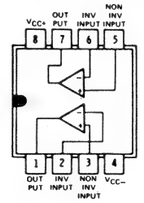
TRUTH TABLE

INPUT STATES				"ON" CHANNEL(S)
INHIBIT	C	B	A	
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	X	X	X	NONE

X = Don't care

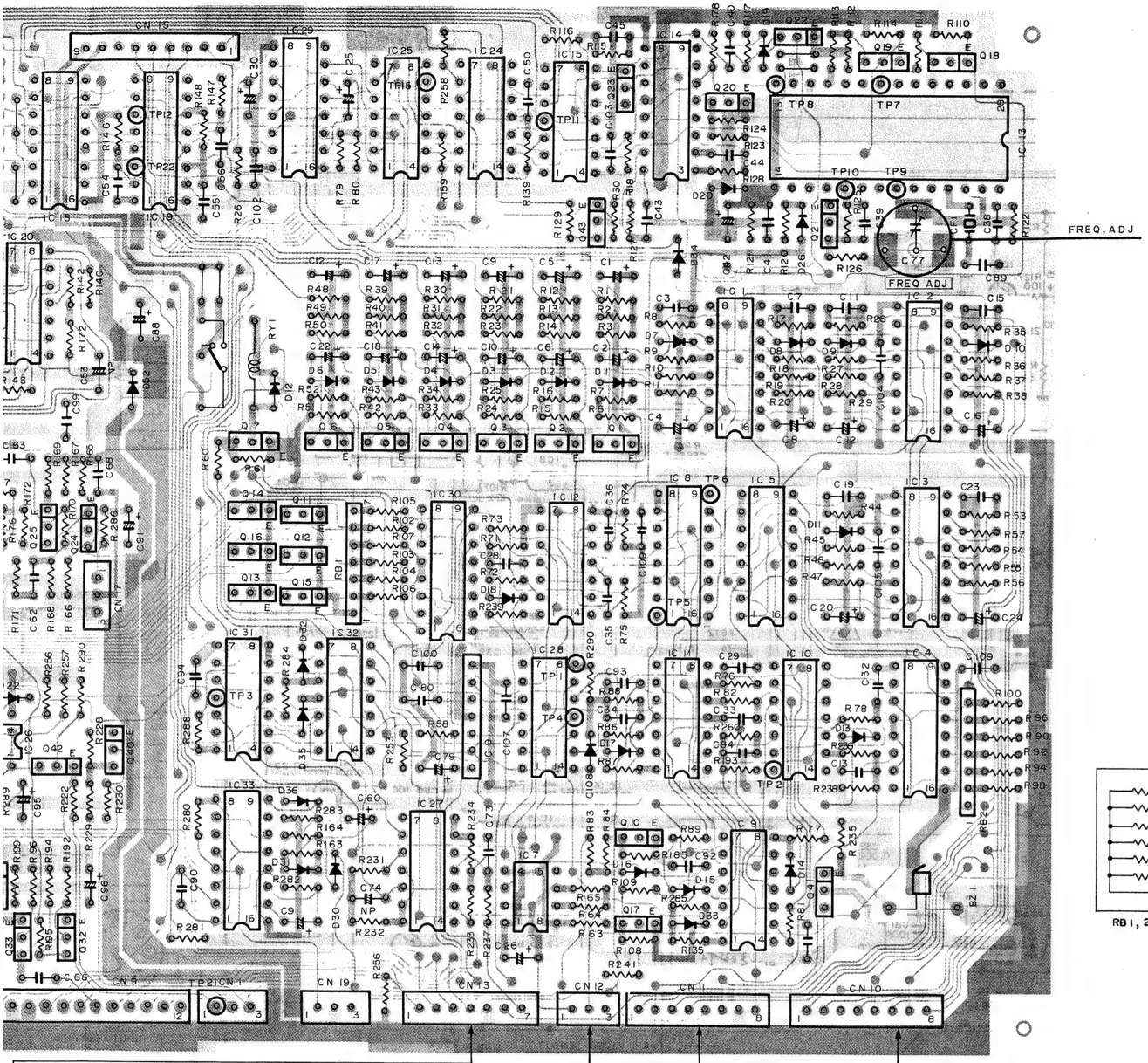
*TL082

JG OR P DUAL-IN-LINE (PACKAGE (TOP VIEW)



5.7 ASB CIRCUIT BOARD (with RSB/TMB/SLB board)

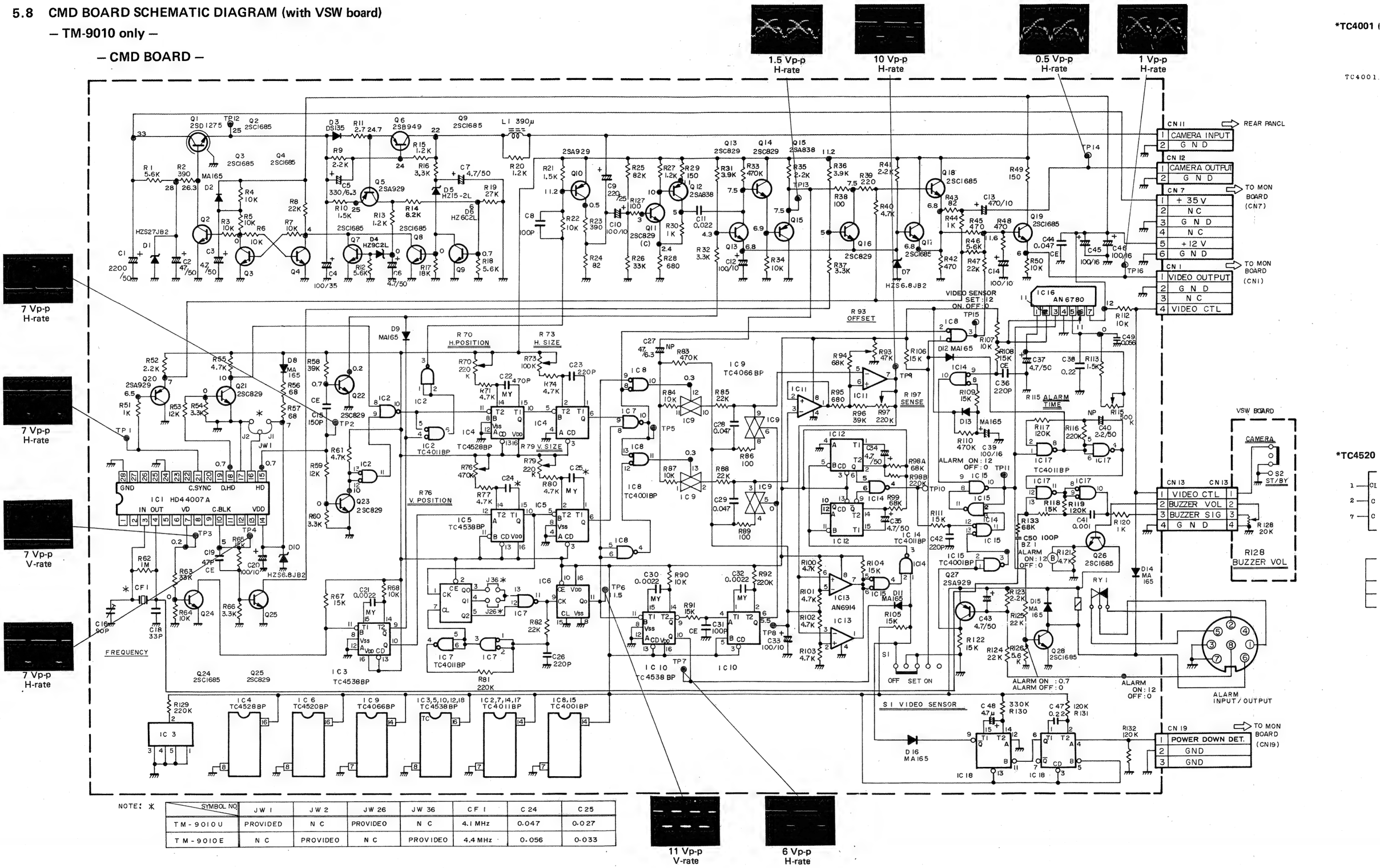
— TM-9060 only —


FREQ, ADJ
FREQ ADJ
RB1, 2
SCAN
R1
CN12
— TMB BOARD —
CN11
CN10
S7
S6
S5
S4
S3
S2
S1
— SLB BOARD —

5.8 CMD BOARD SCHEMATIC DIAGRAM (with VSW board)

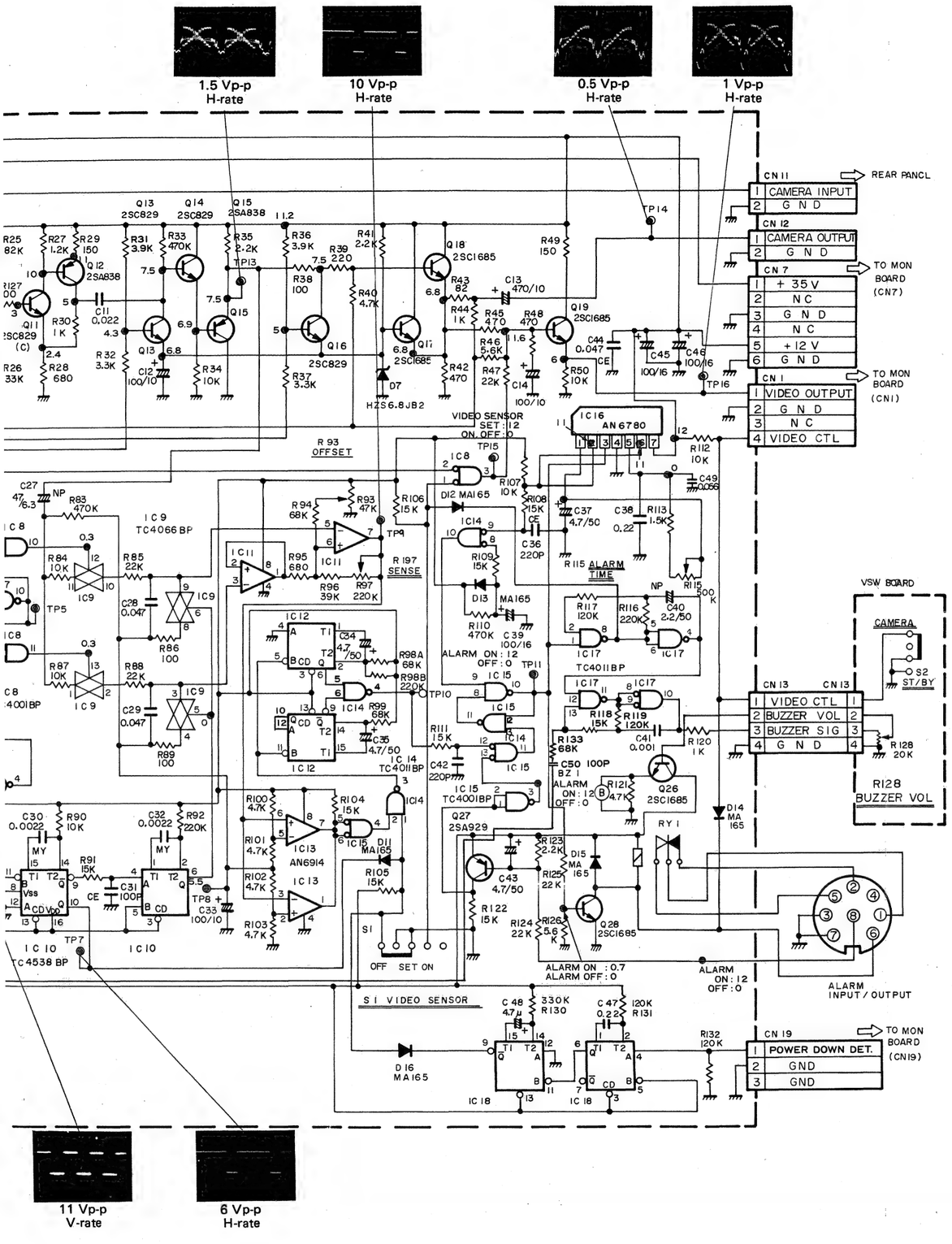
– TM-9010 only –

– CMD BOARD –

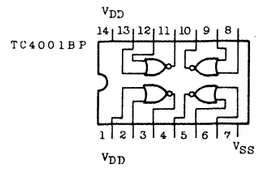


NOTE: *

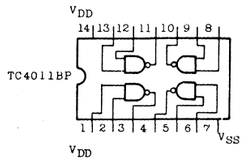
SYMBOL NO.	JW 1	JW 2	JW 26	JW 36	CF 1	C 24	C 25
TM-9010U	PROVIDED	N C	PROVIDEO	N C	4.1 MHz	0.047	0.027
TM-9010E	N C	PROVIDEO	N C	PROVIDEO	4.4 MHz	0.056	0.033



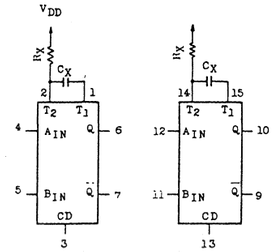
***TC4001 (Quad Positive NOR Gate) [TOSHIBA]**



***TC4011 (Quad Positive NAND Gate) [TOSHIBA]**

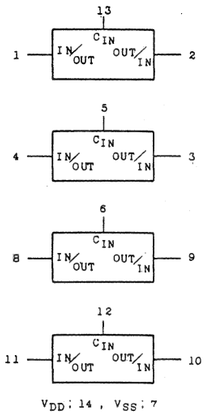


***TC4538 (Resettable MONO Maltivibrator) [TOSHIBA]**



V_{DD} : 16, V_{SS} : 8

***TC4023 (Quad Positive NAND Gate) [TOSHIBA]**



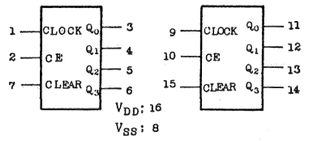
V_{DD} : 14 , V_{SS} : 7

tw=CxRx

INPUT			OUTPUT		NOTE
A_{IN}	B_{IN}	CD	Q	$\bar{Q}$	
∫	H	H	⊓	⊔	OUTPUT ENABLE
∫	L	H	L	H	INHIBIT
H	⊐	H	L	H	INHIBIT
L	⊐	H	⊓	⊔	OUTPUT ENABLE
※	※	L	L	H	INHIBIT

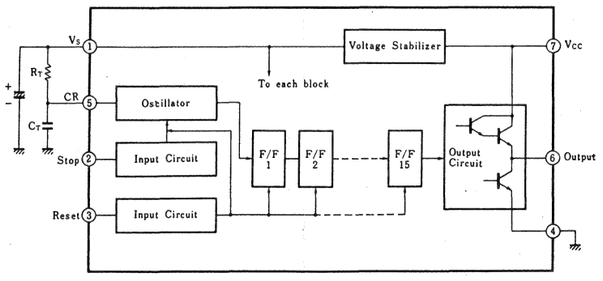
※ Don't Care

***TC4520 (Dual Binary up counter) [TOSHIBA]**



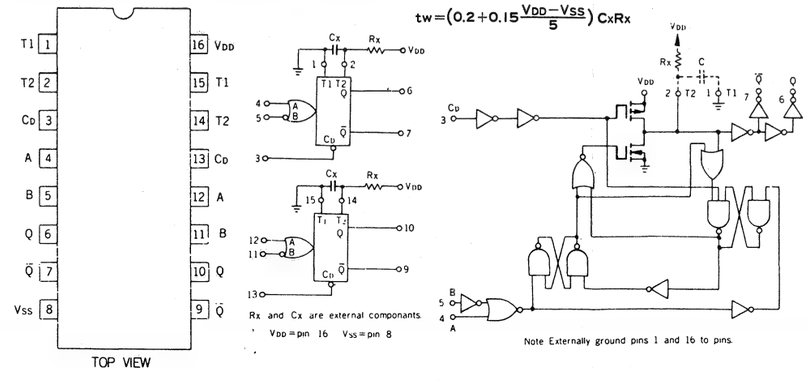
C_{IN}	Impedance Between IN/OUT -- OUT/IN ※
H	0.5 ~ 5×10^2 Ω
L	10^9 Ω

***AN6780 (Timer) [MATSUSAITA]**



***TC4528 (Dual MONO Multivibrator) [TOSHIBA]**

$$tw = (0.2 + 0.15\frac{V_{DD} - V_{SS}}{5})\,CxRx$$

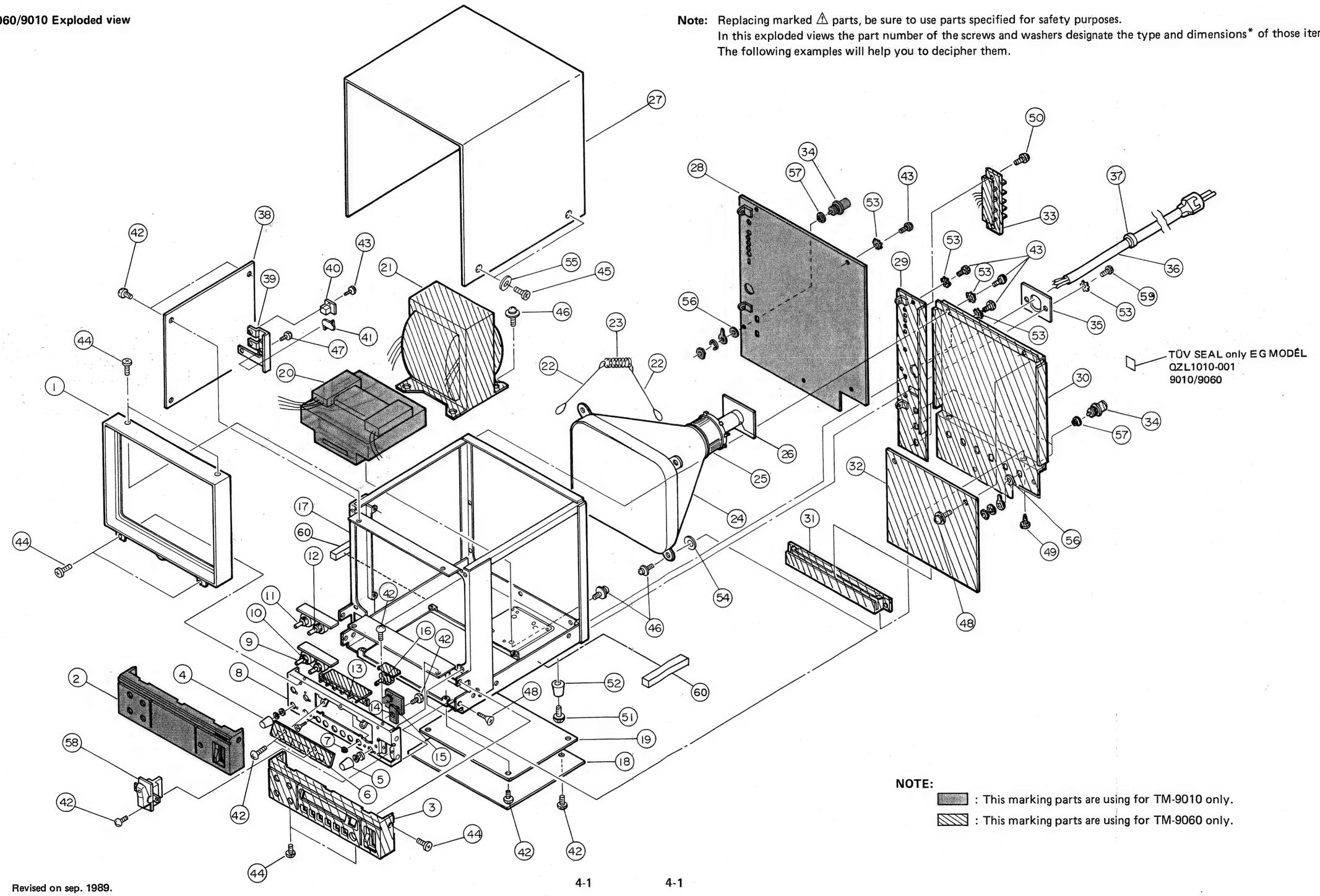


Revised on sep. 1989.

SECTION 4
EXPLODED VIEW AND PARTS LIST

- **TM-9060/9010 Exploded view**

Note: Replacing marked ⚠ parts, be sure to use parts specified for safety purposes.
In this exploded views the part number of the screws and washers designate the type and dimensions* of those items.
The following examples will help you to decipher them.



NOTE:
: This marking parts are using for TM-9010 only.
: This marking parts are using for TM-9060 only.

Revised on sep. 1989.

SECTION 2
ADJUSTMENT PROCEDURE

Notes: 1. TK-10/N10 video camera is necessary for TM-9060/9010 video monitor. However TM-9060 has "VIDEO INPUT" connector, so TM-9060 is possible adjustment by test signal (monoscope signal, crosshatch signal, etc.).

2. Picture adjustment potentiometers are located on the MON board.
   *When adjust the item 1., 2., 3., 4., remove the bottom cover. Possible to adjust from above when the bottom cover is removed. (refer to "1.3.1 Removing the MON board")
   *When adjust the item 4., 5., 6., 7., remove the top cover. (refer to "1.1 REMOVING THE TOP COVER")

1. Power supply adjustment:

Adjustment point	Adjustment VR	Adjust level
Between TP-15 and chassis	R82 12 V ADJ. (NOM board)	12 V ± 0.1 V

2. V-HOLD and H-HOLD adjustment:
   When the picture is distorted in the vertical or horizontal directions, correct these with the V-HOLD (R69) and H-HOLD (R70) potentiometers.

3. Vertical linearity adjustment:
   Apply the image signal from TK-10/N10 so that crosshatch or vertical symmetry can be confirmed. Adjust the V-LIN (R51) potentiometer until the picture distortion becomes minimum.

4. Vertical amplitude adjustment:
   Adjust the HEIGHT (R53) potentiometer togeter with the vertical linearity adjustment so that the picture covers the entire CRT screen.

5. Focus adjustment:

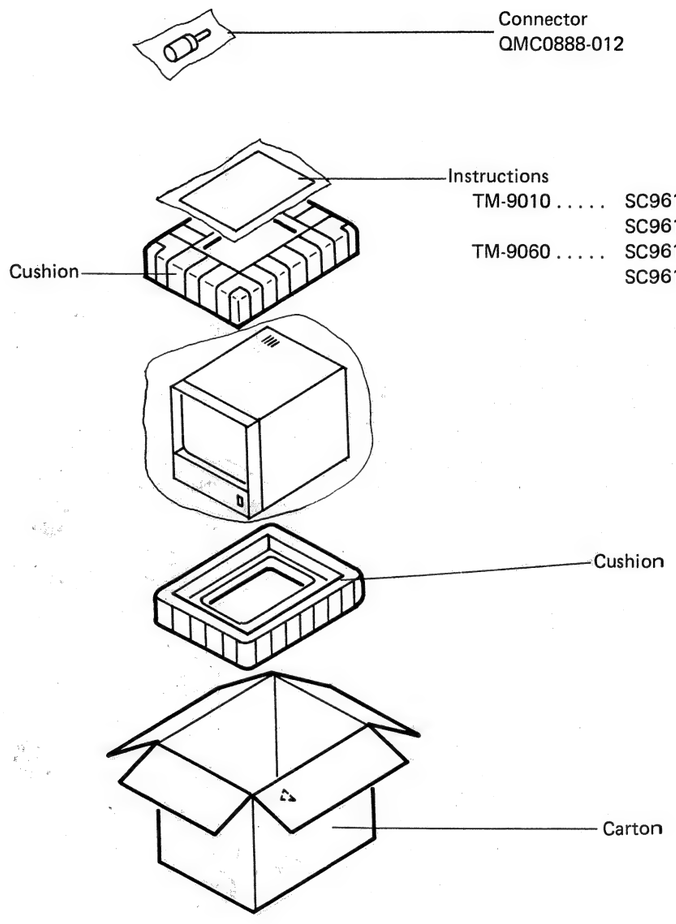
   WARNING! : Be careful not come into contact with the high-voltage focus control potentiometer while adjusting the focus.

   Shoots the object which has white and black details. Set the "BRIGHT" knob (on the front panel) to mechanical center position. Adjust the FOCUS (R68) potentiometer to become best focusing.

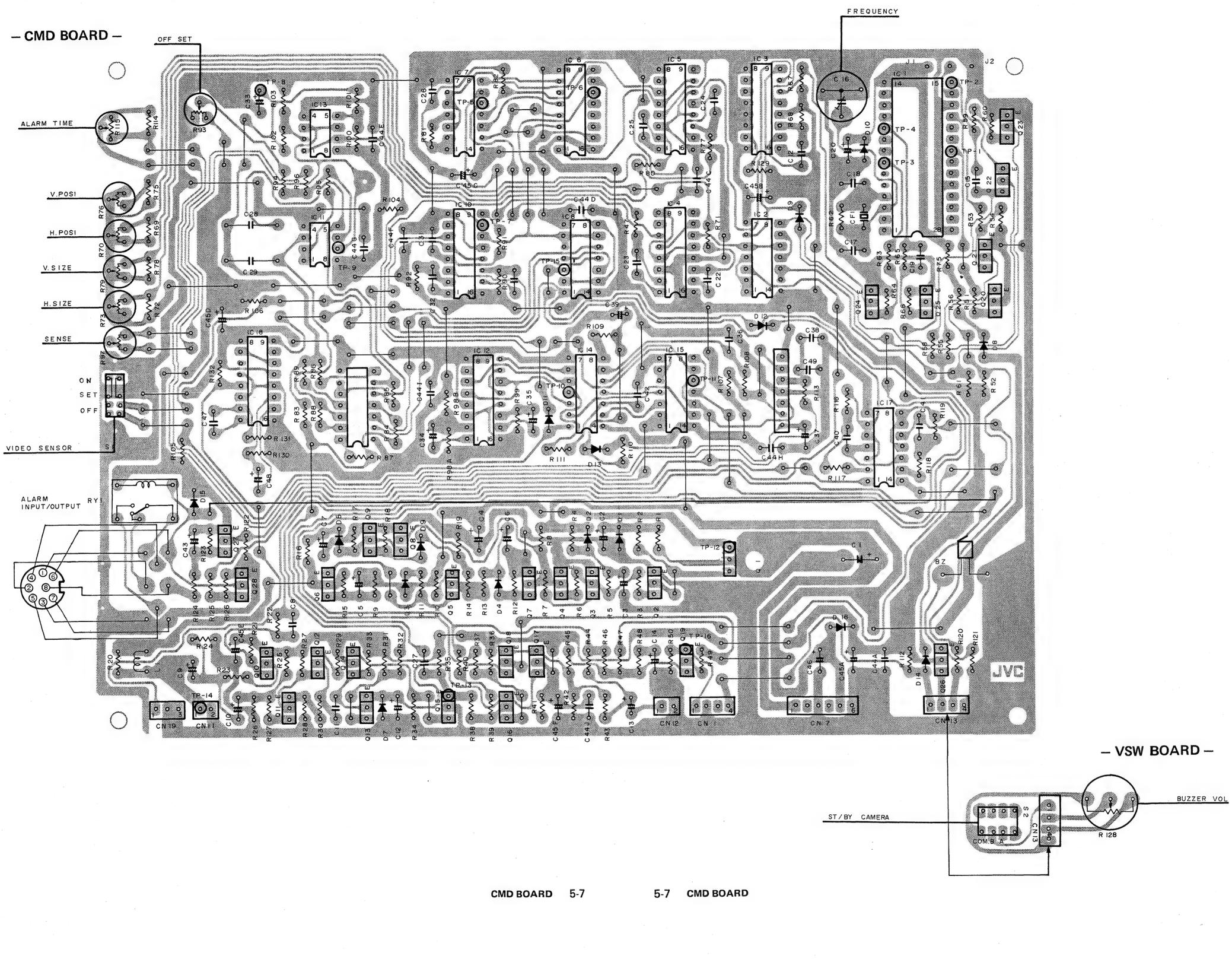
6. SUB-BRIGHTNESS Adjustment:
   Shoots the monochrome object (gray scale pattern etc.) by TK-10/N10. Set the "BRIGHT" and "CONTRAST" knobs (front panel) to mechanical center position. Adjust the "SUB-BRIGHTNESS" (R28) potentiometer so that black part of the gray scale is discriminated on the monitor.

7. DEF yoke adjustment:
   Usually, it is not necessary for DEF yoke replacement. If appear H/V blanking on the monitor, adjust the centering magnets on the yoke ass'y.

REPACKING
SECTION 3



5.9 CMD CIRCUIT BOARD (with VSW board) — TM-9010 only —



SECTION 6
ELECTRICAL PARTS LIST

1. IMPORTANT SAFETY NOTICE

Parts identified by the ⚠ symbol are critical for safety. Replace with parts number specified. For maximum reliability and performance, all other replacement parts should be identical to those specified.

2. Abbreviations in this list are as follows:

RESISTORS — All resistance values are in ohms (Ω).

K	:	1 000
M	:	1 000 000
CR	:	Carbon Resistor
Comp. R	:	Composition Resistor
WR	:	Wire Wound Resistor
OMR	:	Oxide Metal Film Resistor
VR	:	Variable Resistor (Potentiometer)
MFR	:	Metal Film Resistor

CAPACITORS — All capacitance values are in μF, unless otherwise indicated.

P	:	μμF
C Cap	:	Ceramic Capacitor
E Cap	:	Electrolytic Capacitor
FM Cap	:	Film Mica Capacitor
MM Cap	:	Metalized Mylar Capacitor
MP Cap	:	Metalized Paper Capacitor
MY Cap	:	Mylar Capacitor
NP Cap	:	Non-polar Capacitor
PC Cap	:	Polycarbonate Capacitor
PP Cap	:	Poly Pro Capacitor
PS Cap	:	Polystyrol Capacitor
T Cap	:	Tantalum Capacitor
TR Cap	:	Trimmer Capacitor

Tolerances of resistors or capacitors are as follows:

M	:	± 20 %
K	:	± 10 %
J	:	± 5 %
G	:	± 2 %
F	:	± 1 %

6.1 ELECTRICAL PARTS LIST BY ASSEMBLIES

6.1.1 MON board assembly (TM-9060/9010)

Symbol No.	Part No.	Part Name	Description
IC 1	AN5763	IC (M)	MATSUSHITA
IC 2	AN5753	〃	〃
IC 3	AN6530	〃	〃
Q 1	—	—	
Q 2	2SA564(R)	Si. Transistor	
Q 3	2SC829(C)	〃	
Q 4	2SA838C	〃	
Q 5	2SA564R	〃	
Q 6	〃	〃	
Q 7	2SC1685(R,S)	〃	
Q 8	〃	〃	
Q 9	2SC2229(Y)	〃	
Q10	〃	〃	
Q11	—	—	
Q12	2SD1274B	Si. Transistor	
	SS42487-002	Heat Sink	
	SBSB3006Z	Screw	M3 x 6 for H.S.
Q13	2SB943(P,Q)	Si. Transistor	
Q14	2SC1685(R)	〃	
Q15	〃	〃	
D 1	MA165	Si. Diode	
D 2	〃	〃	
D 3	〃	〃	
D 4	—	—	
D 5	1SS82	Si. Diode	
D 6	MA165	〃	
D 7	〃	〃	
D 8	〃	〃	
D 9	DS135D	〃	
D10	MA165	〃	
D11	HZS12JB2	Zener Diode	12 V HITACHI
D12	RGP15G	Si. Diode	
D13	〃	〃	
D14	RH-1	〃	
D15	〃	〃	
D16	RH-1B	〃	
D17	HZS33JB2	Zener Diode	33 V HITACHI
D18	—	—	
D19	—	—	
D20	DBA20C-K15	Si. Diode	
D21	DBA60C-K15	〃	
D22	—	—	
D23	HZS16-2L	Zener Diode	16 V HITACHI
TH 1	ERT-D2FHL202S	THERMISTOR	

Symbol No.	Part No.	Part Name	Description
R 1	QRD161J-103	CR	10 K 1/6 W J
R 2	–	–	
R 3	–	–	
R 4	–	–	
R 5	QRD161J-332	CR	3.3 K 1/6 W J
R 6	" -104	"	100 K " "
R 7	" -222	"	2.2 K " "
R 8	" -105	"	1 M " "
R 9	" -221	"	220 " "
R10	QRD161J-103	"	10 K " "
R11	" -152	"	1.5 K " "
R12	" -104	"	100 K " "
R13	" -183	"	18 K " "
R14	" -102	"	1 K " "
R15	" -181	"	180 " "
R16	" -560	"	56 " "
R17	" -122	"	1.2 K " "
R18	" -103	"	10 K " "
R19	" -473	"	47 K " "
R20	" -103	"	10 K " "
R21	" -333	"	33 K " "
R22	" -103	"	10 K " "
R23	" -100	"	10 " "
R24	" -680	"	68 " "
R25	" -221	"	220 " "
R26	" -823	"	82 K " "
R27	" -154	"	150 K " "
R28	QVZ3505-224	VR	220 K Sub Bright
R29	QRD161J-123	CR	12 K 1/6 W J
R30	" -332	"	3.3 K " "
R31	" -474	"	470 K " "
R32	" -333	"	33 K " "
R33	" -474	"	470 K " "
R34	–	–	
R35	–	–	
R36	–	–	
R37	QRD161J-332	CR	3.3 K 1/6 W J
R38	" -562	"	5.6 K " "
R39	" -473	"	47 K " "
R40	" -103	"	10 K " "
R41	" -103	"	10 K " "
R42	" -103	"	10 K " "
R43	" -472	"	4.7 K " "
R44	–	–	
R45	–	–	
R46	QRD161J-6R8	CR	6.8 1/6 W J
R47	" -2R2	"	2.2 " "
R48	" -2R2	"	2.2 " "
R49	" -2R2	"	2.2 " "
R50	" -683	"	68 K " "
R51	QVP4A0B-224	VR	220 K HEIGHT
R52	QRD161J-222	CR	2.2 K 1/6 W J
R53	QVP4A0B-103	VR	10 K
R54	QRD161J-4R7	CR	4.7 1/6 W J
R55	" -331	"	330 " "
R56	QRX019J-6R8	MFR	6.8 1 W "
R57	QRD161J-472	CR	4.7 K 1/6 W "
R58	" -153	"	15 K " "
R59	" -682	"	6.8 K " "
R60	" -273	"	27 K " "
R61	–	–	
R62	–	–	
R63	QRD161J-331	CR	330 1/6 W J
R64	QRZ0068-560	"	56 " "
R65	" -151	"	150 " "

Symbol No.	Part No.	Part Name	Description
R66	QRX126J-R33A	MFR	0.33 1/2 W J
R67	QRC121J-104	Comp. R	100 K " "
R68	QVPCE01-205	VR	2 M
R69	QVZ3501-104	"	100 K
R70	" -102	"	1 K
R71	–	–	
R72	–	–	
R73	–	–	
R74	–	–	
R75	QRD161J-562	CR	5.6 K 1/6 W J
R76	–	–	
R77	–	–	
R78	–	–	
R79	–	–	
R80	QRD161J-470	CR	47 1/6 W J
R81	QRF106J-270	UFR	27
R82	QVP4A0B-222	VR	2.2 K
R83	QRD161J-472	CR	4.7 K 1/6 W J
R84	" -472	"	4.7 K " "
R85	" -222	"	2.2 K " "
R86	" -104	"	100 K " "
R87	" -102	"	1 K " "
R88	" -102	"	1 K " "
R89	" -222	"	2.2 K " "
R90	" -473	"	47 K " "
R91	" -222	"	2.2 K " "
R92	" -563	"	56 K " "
R441	QRD161J-473	CR	47 K 1/6 W J (TM-9060U)
R441	" -683	"	68 K 1/6 W J (TM-9060E)
R611	QRV141F-2701	MFR	2.7 K 1/4 W F
R612	QRD161J-473	CR	47 K 1/6 W J
C 1	–	–	
C 2	QETA1AM-476	E Cap	47 10 V
C 3	QETA1HM-105	"	1 50 V
C 4	QFN41HJ-223	MY Cap	0.022 " J
C 5	QCS11HJ-221	C Cap	220 P " "
C 6	QETA1AM-476	E Cap	47 10 V
C 7	–	–	
C 8	QCS11HJ-101	C Cap	100 P 50 V J
C 9	QEN61HM-105	NP Cap	1 " "
C10	QETA1AM-476	E Cap	47 10 V
C11	QCS11HJ-221	C Cap	220 P 50 V J
C12	QCF12HP-103	"	0.01 500 V
C13	QETA1CM-106	E Cap	10 16 V
C14	QFN41HJ-153	MY Cap	0.015 50 V
C15	" -153	"	0.015 "
C16	" -153	"	0.015 "
C17	QEJ41VM-334	T Cap	0.33 35 V
C18	QEJ41AM-475	"	4.7 10 V
C19	" -475	"	4.7 "
C20	QETA1CM-106	E Cap	10 16 V

Symbol No.	Part No.	Part Name	Description
C21	QETA1CM-106	E Cap	10 16 V
C22	QETA1AM-477	"	470 10 V (for U-type)
C22	" -108	"	1000 10 V (for E-type)
C23	QFN41HJ-333	MY Cap	0.033 50 V J
C24	QETA1CM-227	E Cap	220 16 V
C25	" -228	"	2200 "
C26	" -108	"	1000 "
C27	-475	NP Cap	4.7 25 V
C28	QFN41HJ-223	MY Cap	0.022 50 V J
C29	" -153	"	0.015 " "
C30	" -183	"	0.018 " "
C31	QETA1HM-106	E Cap	10 "
C32	QFN41HJ-153	MY Cap	0.015 " J
C33	QETA1CM-227	E Cap	220 16 V
C34	QFP32AJ-392	PP Cap	3900 P 100 V J
C35	QFN41HJ-102	MY Cap	1000 P 50 V "
C36	" -472	"	4700 P " "
C37	QFP32XK-183	PP Cap	0.018 630 V K
C38	" -153	"	0.015 " "
C39	" -222	"	2200 P " "
C40	—	—	
C41	QETA1CM-227	E Cap	220 16 V
C42	QETA1VM-107	"	100 35 V
C43	QETA2AM-226	"	22 100 V
C44	" -226	"	22 "
C45	QFP32XK-103	PP Cap	0.01 630 V K
C46	—	—	
C47	—	—	
C48	—	—	
C49	—	—	
C50	QCF11HP-103	C Cap	0.01 50 V
C51	" -103	"	0.01 "
C52	" -103	"	0.01 "
C53	QETA1VM-338	E Cap	3300 35 V
C54	QETA1HM-474	"	0.47 50 V
C55	QETA1CM-476	"	47 16 V
C56	QCF12HP-103	C Cap	0.01 100 V
C57	" -103	"	0.01 "
C58	" -103	"	0.01 "
C59	QEV71HR-688	E Cap	6800 50 V
L 1	SCV0331-100	Peaking Coil	10 μH
L 2	SCV0736	Linearity Coil	4.7 μH
L 3	SCV0737	Choke Coil	11 μH
L 4	SSV0569	Coil	250 μH
⚠T 1	SCV0887	H. D. Trans.	
⚠T 2	SCV0739	F.B. Trans.	

Symbol No.	Part No.	Part Name	Description
CN 1	SS30644-004	Post Header	
CN 2	—	—	
CN 3	SS30644-004	Post Header	
CN 4	—	—	
CN 5	SS30810-006	UL Post Header	
CN 6	SM3490-004	UL P.M. Pin	
CN 7	SS30644-006	Post Header	
	SS42487-002	Heat Sink	
	SJ42418	"	
⚠F 1	QMF51J1-1R6	Fuse (TM-9060 U-type)	
⚠F 1	QMF51A2-R80	" (TM-9060 E-type)	
⚠F 1	QMF51J1-R80	" (TM-9010 U-ytpe)	
⚠F 1	QMF51A2-R63	" (TM-9010 E-type)	
⚠	E48965-002	Fuse Holder	

6.1.2 SOC board assembly (TM-9060/9010)

Symbol No.	Part No.	Part Name	Description
Q11	2SA949(Y)	Si Transistor	
D25	MA165	Si Diode	
D26	HZS36JB3	Zenner Diode	
R71	QRG029J-392	OMF R	
R72	QRZ0068-102	UNF R	
R73	QRD161J-153	CR	
R74	QRZ0068-102	UNF R	
R95	QRD161J-272	CR	
C47	QFP32XK-103	PP Cap	
C49	QETA2AM-226	E Cap	
C60	QETC1HM-105	"	
L 5	SCV0331-470	Peaking Coil	
L 6	" -390	"	
SG 1	SCV0944-001	Spark Gap	

6.1.3 BCW board assembly (TM-9060/9010)

Symbol No.	Part No.	Part Name	Description
R34	QVG4A2B-023V	VR	CONTRAST
R35	QRD161J-221	CR	
R36	QVG4A2B-013V	VR	BRIGHT

6.1.4 SLB board assembly (TM-9060 only)

Symbol No.	Part No.	Part Name	Description
Q 1	2SC1685(R)	Si Transistor	
R 1	QRD161J-152	CR	1.5 K 1/6 W J
R 2	" -561	"	560 " "
S1–S7	Refer to Section 4. "Exploded View and parts list".		

6.1.5 ASB board assembly (TM-9060 only)

Symbol No.	Part No.	Part Name	Description
IC 1	TC4538BP	IC (M)	
IC 2	"	"	
IC 3	"	"	
IC 4	TC4051BP	"	
IC 5	"	"	
IC 6	AN6780	"	
IC 7	TA7555P	"	
IC 8	TC4520BP	"	
IC 9	TC4011BP	"	
IC10	"	"	
IC11	TC4069UBP	"	
IC12	TC4011BP	"	
IC13	HD44007A	"	
IC14	TC4538BP	"	
IC15	TC4011BP	"	
IC16	TC4528BP	"	
IC17	TC4538BP	"	
IC18	TC4520BP	"	
IC19	TC4538BP	"	
IC20	TC4066BP	"	
IC21	TL082CP	"	
IC22	AN6914	"	
IC23	TC4001BP	"	
IC24	TC4069UBP	"	
IC25	TC4023BP	"	
IC26	TC4066BP	"	
IC27	TC4011BP	"	
IC28	TC4001BP	"	
IC29	TC4538BP	"	
IC30	TC4051BP	"	
IC31	TC4011BP	"	
IC32	TC4069UBP	"	
IC33	TC4538BP	"	
Q 1	2SA929(F)	Si. Transistor	
Q 2	"	"	
Q 3	"	"	
Q 4	"	"	
Q 5	"	"	
Q 6	"	"	
Q 7	2SC1685(R)	"	
Q 8	2SA929(F)	"	
Q 9	2SC1685(R)	"	
Q10	"	"	
Q11	"	"	
Q12	"	"	
Q13	"	"	
Q14	"	"	
Q15	"	"	
Q16	"	"	
Q17	2SA929(F)	"	
Q18	"	"	
Q19	2SC829(C)	"	
Q20	"	"	
Q21	"	"	
Q22	"	"	
Q23	"	"	
Q24	"	"	
Q25	2SA838C	"	

Symbol No.	Part No.	Part Name	Description
Q26	2SC829(C)	Si. Transistor	
Q27	"	"	
Q28	2SA838C	"	
Q29	2SC829(C)	"	
Q30	2SC1685(R)	"	
Q31	"	"	
Q32	2SC829(C)	"	
Q33	"	"	
Q34	2SA838C	"	
Q35	2SC829(C)	"	
Q36	2SC1685(R)	"	
Q37	"	"	
Q38	2SC829(C)	"	
Q39	"	"	
Q40	2SC1685(R)	"	
Q41	"	"	
Q42	"	"	
Q43	2SA929(F)	"	
Q44	2SC829(C)	"	
Q45	2SA838C	"	
Q46	2SC829(C)	"	
Q47	"	"	
D 1	MA165	Si. Diode	
D 2	"	"	
D 3	"	"	
D 4	"	"	
D 5	"	"	
D 6	"	"	
D 7	"	"	
D 8	"	"	
D 9	"	"	
D10	"	"	
D11	"	"	
D12	"	"	
D13	"	"	
D14	"	"	
D15	"	"	
D16	"	"	
D17	"	"	
D18	"	"	
D19	"	"	
D20	HZS6.8JB2	Zener Diode	6.8V HITACHI
D21	—	—	
D22	MA165	Si. Diode	
D23	"	"	
D24	HZS6.8JB2	Zener Diode	6.8V HITACHI
D25	DS135D	Si. Diode	
D26	MA165	"	
D27	—	—	
D28	—	—	
D29	—	—	
D30	MA165	Si. Diode	
D31	"	"	
D32	"	"	
D33	"	"	
D34	"	"	
D35	"	"	

Symbol No.	Part No.	Part Name	Description
D36	MA165	Si. Diode	
D37	"	"	
R 1	QRD161J-103	CR	10 K 1/6 W J
R 2	" -332	"	3.3 K " "
R 3	" -103	"	10 K " "
R 4	—	—	
R 5	—	—	
R 6	QRD161J-153	CR	15 K 1/6 W J
R 7	" -104	"	100 K " "
R 8	" -153	"	15 K " "
R 9	" -153	"	15 K " "
R10	" -153	"	15 K " "
R11	" -104	"	100 K " "
R12	" -103	"	10 K " "
R13	" -332	"	3.3 K " "
R14	" -103	"	10 K " "
R15	" -153	"	15 K " "
R16	" -104	"	100 K " "
R17	" -153	"	15 K " "
R18	" -153	"	15 K " "
R19	" -153	"	15 K " "
R20	" -104	"	100 K " "
R21	" -103	"	10 K " "
R22	" -332	"	3.3 K " "
R23	" -103	"	10 K " "
R24	" -153	"	15 K " "
R25	" -104	"	100 K " "
R26	" -153	"	15 K " "
R27	" -153	"	15 K " "
R28	" -153	"	15 K " "
R29	" -104	"	100 K " "
R30	" -103	"	10 K " "
R31	" -332	"	3.3 K " "
R32	" -103	"	10 K " "
R33	" -153	"	15 K " "
R34	" -104	"	100 K " "
R35	" -153	"	15 K " "
R36	" -153	"	15 K " "
R37	" -153	"	15 K " "
R38	" -104	"	100 K " "
R39	" -103	"	10 K " "
R40	" -332	"	3.3 K " "
R41	" -103	"	10 K " "
R42	" -153	"	15 K " "
R43	" -104	"	100 K " "
R44	" -153	"	15 K " "
R45	" -153	"	15 K " "
R46	" -153	"	15 K " "
R47	" -104	"	100 K " "
R48	" -103	"	10 K " "
R49	" -332	"	3.3 K " "
R50	" -103	"	10 K " "
R51	" -153	"	15 K " "
R52	" -104	"	100 K " "
R53	" -153	"	15 K " "
R54	" -153	"	15 K " "
R55	" -153	"	15 K " "
R56	" -104	"	100 K " "
R57	" -223	"	22 K " "
R58	" -152	"	1.5 K " "
R59	QVPBA01-504	VR	500 K
R60	QRD161J-393	CR	39 K 1/6 W J

Symbol No.	Part No.	Part Name	Description
R61	QRD161J-103	CR	10 K 1/6 W J
R62	—	—	
R63	QRD161J-562	CR	5.6 K 1/6 W J
R64	" -102	"	1 K " "
R65	" -155	"	1 M " "
R66	" -123	"	12 K " "
R67	" -332	"	3.3 K " "
R68	" -333	"	33 K " "
R69	" -104	"	100 K " "
R70	" -153	"	15 K " "
R71	" -104	"	100 K " "
R72	" -153	"	15 K " "
R73	" -104	"	100 K " "
R74	" -473	"	47 K " "
R75	" -473	"	47 K " "
R76	" -473	"	47 K " "
R77	" -153	"	15 K " "
R78	" -473	"	47 K " "
R79	" -683	"	68 K " "
R80	" -224	"	220 K " "
R81	" -153	"	15 K " "
R82	" -473	"	47 K " "
R83	" -104	"	100 K " "
R84	" -333	"	33 K " "
R85	" -223	"	22 K " "
R86	" -104	"	100 K " "
R87	" -153	"	15 K " "
R88	" -105	"	1 M " "
R89	" -153	"	15 K " "
R90	" -222	"	2.2 K " "
R91	—	—	
R92	QRD161J-222	CR	2.2 K 1/6 W J
R93	—	—	
R94	QRD161J-222	CR	2.2 K 1/6 W J
R95	—	—	
R96	QRD161J-222	CR	2.2 K 1/6 W J
R97	—	—	
R98	QRD161J-222	CR	2.2 K 1/6 W J
R99	QRV141F-75R0	MFR	75 1/4 W F
R100	QRD161J-222	CR	2.2 K 1/6 W J
R101	—	—	
R102	QRD161J-103	CR	10 K 1/6 W J
R103	" -103	"	10 K " "
R104	" -103	"	10 K " "
R105	" -103	"	10 K " "
R106	" -103	"	10 K " "
R107	" -103	"	10 K " "
R108	" -103	"	10 K " "
R109	" -473	"	47 K " "
R110	" -681	"	680 " "
R111	" -101	"	100 " "
R112	" -332	"	3.3 K " "
R113	" -123	"	12 K " "
R114	" -472	"	4.7 K " "
R115	" -123	"	12 K " "
R116	" -332	"	3.3 K " "
R117	" -273	"	27 K " "
R118	" -472	"	4.7 K " "
R119	" -471	"	470 " "
R120	" -680	"	68 " "
R121	" -680	"	68 " "
R122	" -105	"	1 M " "
R123	" -333	"	33 K " "
R124	" -103	"	10 K " "
R125	" -123	"	12 K " "

Symbol No.	Part No.	Part Name	Description
R126	QRD161J-332	CR	3.3 K 1/6 W J
R127	" -473	"	47 K " "
R128	" -103	"	10 K " "
R129	" -102	"	1 K " "
R130	" -332	"	3.3 K " "
R131	" -472	"	4.7 K " "
R132	QVPD601-474	VR	470 K
R133	QRD161J-472	CR	4.7 K 1/6 W J
R134	QVPD601-224	VR	220 K
R135	QRD161J-562	CR	5.6 K 1/6 W J
R136	QVPD601-105	VR	1 M
R137	QRD161J-472	CR	4.7 K 1/6 W J
R138	—	—	
R139	QRD161J-153	CR	15 K 1/6 W J
R140	QRV141F-1002	MFR	10 K 1/4 W F
R141	" -2202	"	20 K " "
R142	" -1002	"	10 K " "
R143	" -2202	"	20 K " "
R144	QRD161J-101	CR	100 1/6 W J
R145	" -101	"	100 " "
R146	" -103	"	10 K " "
R147	" -153	"	15 K " "
R148	" -224	"	220 K " "
R149	" -681	"	680 " "
R150	QVPD601-473	VR	47 K
R151	QRD161J-104	CR	100 K 1/6 W J
R152	" -223	"	22 K " "
R153	QVPD601-474	VR	470 K
R154	QRD161J-472	CR	4.7 K 1/6 W J
R155	" -472	"	4.7 K " "
R156	" -472	"	4.7 K " "
R157	" -472	"	4.7 K " "
R158	" -153	"	15 K " "
R159	" -153	"	15 K " "
R160	" -333	"	33 K " "
R161	" -153	"	15 K " "
R162	" -104	"	100 K " "
R163	" -474	"	470 K " "
R164	" -474	"	470 K " "
R165	" -683	"	68 K " "
R166	" -393	"	39 K " "
R167	" -122	"	1.2 K " "
R168	" -681	"	680 " "
R169	" -151	"	150 " "
R170	" -102	"	1 K " "
R171	" -122	"	1.2 K " "
R172	" -334	"	330 K " "
R173	—	—	
R174	QRD161J-122	CR	1.2 K 1/6 W J
R175	—	—	
R176	QRD161J-472	CR	4.7 K 1/6 W J
R177	" -152	"	1.5 K " "
R178	" -153	"	15 K " "
R179	" -101	"	100 " "
R180	" -562	"	5.6 K " "
R181	" -152	"	1.5 K " "
R182	—	—	
R183	QRD161J-101	CR	100 1/6 W J
R184	" -221	"	220 " "
R185	" -472	"	4.7 K " "
R186	" -472	"	4.7 K " "
R187	" -152	"	1.5 K " "
R188	" -270	"	27 " "
R189	" -471	"	470 " "
R190	" -820	"	82 " "

Symbol No.	Part No.	Part Name	Description
R191	QRD161J-102	CR	1 K 1/6 W J
R192	" -334	"	330 K " "
R193	" -153	"	15 K " "
R194	" -472	"	4.7 K " "
R195	" -152	"	1.5 K " "
R196	" -101	"	100 " "
R197	" -562	"	5.6 K " "
R198	—	—	
R199	QRD161J-152	CR	1.5 K 1/6 W J
R200	" -101	"	100 " "
R201	" -221	"	220 " "
R202	" -472	"	4.7 K " "
R203	" -152	"	1.5 K " "
R204	" -472	"	4.7 K " "
R205	" -822	"	8.2 K " "
R206	—	—	
R207	—	—	
R208	QRD161J-270	CR	27 1/6 W J
R209	" -471	"	470 " "
R210	" -820	"	82 " "
R211	" -102	"	1 K " "
R212	" -471	"	470 " "
R213	" -562	"	5.6 K " "
R214	" -223	"	22 K " "
R215	" -153	"	15 K " "
R216	" -153	"	15 K " "
R217	" -223	"	22 K " "
R218	" -101	"	100 " "
R219	" -222	"	2.2 K " "
R220	" -474	"	470 K " "
R221	" -223	"	22 K " "
R222	" -103	"	10 K " "
R223	" -153	"	15 K " "
R224	" -101	"	100 " "
R225	" -222	"	2.2 K " "
R226	" -474	"	470 K " "
R227	" -223	"	22 K " "
R228	" -473	"	47 K " "
R229	" -103	"	10 K " "
R230	" -123	"	12 K " "
R231	" -104	"	100 K " "
R232	" -474	"	470 K " "
R233	" -104	"	100 K " "
R234	" -104	"	100 K " "
R235	" -472	"	4.7 K " "
R236	" -153	"	15 K " "
R237	" -102	"	1 K " "
R238	" -153	"	15 K " "
R239	" -153	"	15 K " "
R240	—	—	
R241	QRD161J-222	CR	2.2 K 1/6 W J
R242	" -185	"	1.8 M " "
R243	" -683	"	68 K " "
R244	" -393	"	39 K " "
R245	" -122	"	1.2 K " "
R246	" -681	"	680 " "
R247	" -151	"	150 " "
R248	" -102	"	1 K " "
R249	—	—	
R250	QRD161J-472	CR	4.7 K 1/6 W J
R251	" -152	"	1.5 K " "
R252	" -122	"	1.2 K " "
R253	" -223	"	22 K " "
R254	" -221	"	220 " "
R255	" -105	"	1 M " "

Symbol No.	Part No.	Part Name	Description
R256	QRD161J-105	CR	1 M 1/6 W J
R257	" -105	"	1 M " "
R258	" -184	"	180 K " "
R259	" -334	"	330 K " "
R260	" -153	"	15 K " "
R261	" -683	"	68 K " "
R262	" -101	"	100 " "
R263	" -153	"	15 K " "
R264	—	—	
R265	—	—	
R266	QVPD601-224	VR	220 K
R267	—	—	
R268	—	—	
R269	—	—	
R270	QRD161J-104	CR	100 K 1/6 W J
R271	" -474	"	470 K " "
R272	—	—	
R273	—	—	
R274	—	—	
R275	—	—	
R276	—	—	
R277	—	—	
R278	—	—	
R279	—	—	
R280	QRD161J-104	CR	100 K 1/6 W J
R281	" -334	"	330 K " "
R282	" -184	"	180 K " "
R283	—	—	
R284	QRD161J-153	CR	15 K 1/6 W J
R285	" -104	"	100 K " "
R286	" -471	"	470 " "
R287	" -471	"	470 " "
R288	" -101	"	100 " "
R289	" -471	"	470 " "
R290	" -151	"	150 " "
R300	" -394	"	390 K " "
R301	" -153	"	15 K " "
C 1	QETA1CM-106	E Cap	10 16 V
C 2	QETA1HM-474	"	0.47 50 V
C 3	QCF11HP-103	C Cap	0.01 " P
C 4	QETA1HM-474	E Cap	0.47 "
C 5	QETA1CM-106	"	10 16 V
C 6	QETA1HM-474	"	0.47 50 V
C 7	QCF11HP-103	C Cap	0.01 " P
C 8	QETA1HM-474	E Cap	0.47 "
C 9	QETA1CM-106	"	10 16 V
C10	QETA1HM-474	"	0.47 50 V
C11	QCF11HP-103	C Cap	0.01 " P
C12	QETA1HM-474	E Cap	0.47 "
C13	QETA1CM-106	"	10 16 V
C14	QETA1HM-474	"	0.47 50 V
C15	QCF11HP-103	C Cap	0.01 " P
C16	QETA1HM-474	E Cap	0.47 "
C17	QETA1CM-106	"	10 16 V
C18	QETA1HM-474	"	0.47 50 V
C19	QCF11HP-103	C Cap	0.01 " P
C20	QETA1HM-474	E Cap	0.47 "

Symbol No.	Part No.	Part Name	Description
C21	QETA1CM-106	E Cap	10 16 V
C22	QETA1HM-474	"	0.47 50 V
C23	QCF11HP-103	C Cap	0.01 " P
C24	QETA1HM-474	E Cap	0.47 "
C25	" -475	"	4.7 "
C26	QECA1EM-475	"	4.7 25 V
C27	QFN41HJ-103	MY Cap	0.01 50 V J
C28	" -102	"	1000 P " "
C29	QCS11HJ-101	C Cap	100 P " "
C30	QETA1HM-475	E Cap	4.7 "
C31	QCF31HP-103	C Cap	0.01 " P
C32	QCS11HJ-101	"	100 P " J
C33	" -101	"	100 P " "
C34	QFN41HJ-222	MY Cap	2200 P " "
C35	QCS11HJ-101	C Cap	100 P " "
C36	" -101	"	100 P " "
C37	—	—	
C38	QCS11HJ-330	C Cap	33 P 50 V J (for U-type)
C38	" -330	"	33 P 50 V J (for E-type)
C39	" -101	"	100 P 50 V J
C40	" -151	"	150 P " "
C41	QCF11HP-103	"	0.01 " P
C42	QETA1CM-476	E Cap	47 16 V
C43	QFN41HJ-102	MY Cap	1000 P 50 V J
C44	" -222	"	2200 P " "
C45	QCS11HJ-101	C Cap	100 P " "
C46	QFN41HJ-471	MY Cap	470 P " "
C47	QCS11HJ-221	C Cap	220 P " "
C48	QFN41HJ-473	MY Cap	0.047 " "
C49	" -273	"	0.027 " "
C50	QCS11HJ-471	C Cap	470 P " "
C51	QFP42AF-473	PP Cap	0.047 100 V F
C52	" -473	"	0.047 " "
C53	QEPA0JM-476	E Cap	47 6.3 V
C54	QFN41HJ-222	MY Cap	2200 P 50 V J
C55	" -222	"	2200 P " "
C55	" -472	"	4700 P " "
C56	QCS11HJ-101	C Cap	100 P " "
C57	QETA1CM-476	E Cap	47 16 V
C58	" -476	"	47 "
C59	" -476	"	47 "
C60	QEB41CM-107	"	100 "
C61	QETA1AM-107	"	100 10 V
C62	QCS11HJ-5R0	C Cap	5 P 50 V J
C63	QFN41HJ-223	MY Cap	0.022 " "
C64	QETA1CM-476	E Cap	47 16 V
C65	QETA1AM-108	"	1000 10 V
C66	QFN41HJ-223	MY Cap	0.022 50 V J
C67	QETA1CM-476	E Cap	47 16 V
C68	" -476	"	47 "
C69	" -476	"	47 "
C70	" -476	"	47 "
C71	QCS11HJ-100	C Cap	10 P 50 V J
C72	" -100	"	10 P " "
C73	QFN41HJ-122	MY Cap	1200 P " "
C74	QEPA1HM-105	E Cap	1 "
C75	QETA1CM-476	"	47 16 V
C76	" -476	"	47 "
C77	QAT3001-102	TR Cap	8–90P 250 V
C78	QETA1AM-108	E Cap	1000 10 V
C79	QETA1CM-106	"	10 16 V
C80	QFN41HJ-224	MY Cap	0.22 50 V J
C81	QETA1CM-476	E Cap	47 16 V

Symbol No.	Part No.	Part Name	Description
C82	—	—	
C83	QETA1CM-476	E Cap	47 16 V
C84	QCF41HP-103	C Cap	0.01 50 V P
C85	QETA1AM-107	E Cap	100 10 V
C86	QFN41HJ-223	MY Cap	0.022 50 V J
C87	—	—	
C88	QETA1CM-476	E Cap	47 16 V
C89	QCF11HP-103	C Cap	0.01 50 V P
C90	QFN41HJ-224	MY Cap	0.22 50 V
C91	QETA1CM-106	E Cap	10 16 V
C92	" -106	"	10 "
C93	QCS11HJ-391	C Cap	390 P 50 V J
C94	QCS31HJ-5R0	"	5 P " "
C95	QETA1CM-476	E Cap	47 16 V
C96	" -476	"	47 "
C97	QCF11HP-103	C Cap	0.01 50 V P
C98	" -103	"	0.01 " "
C99	" -103	"	0.01 " "
C100	QFN31HJ-563	MY Cap	0.056 "
C101	QCF11HP-103	C Cap	0.01 " P
C102	" -103	"	0.01 " "
C103	" -103	"	0.01 " "
C104	" -103	"	0.01 " "
C105	" -103	"	0.01 " "
C106	" -103	"	0.01 " "
C107	" -103	"	0.01 " "
C108	" -103	"	0.01 " "
C109	" -103	"	0.01 " "
C110	" -103	"	0.01 " "
C111	" -471	"	470 P " "
C112	" -471	"	470 P " "
C113	" -471	"	470 P " "
C114	" -471	"	470 P " "
C115	" -471	"	470 P " "
C116	" -471	"	470 P " "
C117	" -821	"	820 P " "
C118	" -821	"	820 P " "
RB 1	QRB061K-153	Resistor Array	15 K
RB 2	" -104	"	100 K
RY 1	AG2303	Relay	
CF 1	SC42004-415	Cera. Filter	4.1 MHz (U-type)
CF 1	" -445	"	4.4 MHz (E-type)
BZ 1	SSV0275	Buzzer	
J10	SSV0454	RCA Pin Receptacle	
J13	QMC0889-005	Socket	
CN 9	SS30644-010	Connector	10 Pin
CN10	" -008	"	8 Pin
CN11	" -008	"	8 Pin
CN12	" -003	"	3 Pin
CN13	" -007	"	7 Pin
CN14	" -006	"	6 Pin
CN15	" -009	"	9 Pin
CN19	" -003	"	3 Pin
S 1	QSS1A22-S01	Slide Switch	
S 2	QSS1B23-S01	"	

6.1.6 CBB board assembly (TM-9060 only)

Symbol No.	Part No.	Part Name	Description
IC 1	TC4011BP	IC (M)	
IC 2	"	"	
IC 3	"	"	
IC 4	—	HIC Board Ass'y	
IC 5	TC4051BP	IC (M)	
IC 6	TC4069UBP	"	
Q 1	2SA929(F)	Si. Transistor	
Q 2	2SC1685(R)	"	
Q 3	2SD1275(P,Q)	"	
Q 4	2SC1685(R)	"	
Q 5	2SB949(P,Q)	"	
Q 6	2SA929(F)	"	
Q 7	2SC1685(R)	"	
Q 8	"	"	
Q 9	"	"	
Q10	2SA929(F)	"	
Q11	2SC1685(R)	"	
Q12	2SD1275(P,Q)	"	
Q13	2SC1685(R)	"	
Q14	2SB949(P,Q)	"	
Q15	2SA929(F)	"	
Q16	2SC1685(R)	"	
Q17	"	"	
Q18	"	"	
Q19	2SA929(F)	"	
Q20	2SC1685(R)	"	
Q21	2SD1275(P,Q)	"	
Q22	2SC1685(P,Q)	"	
Q23	2SB949(P,Q)	"	
Q24	2SA929(F)	"	
Q25	2SC1685(R)	"	
Q26	"	"	
Q27	"	"	
Q28	2SA929(F)	"	
Q29	2SC1685(R)	"	
Q30	2SD1275(P,Q)	"	
Q31	2SC1685(R)	"	
Q32	2SB949(P,Q)	"	
Q33	2SA929(F)	"	
Q34	2SC1685(R)	"	
Q35	"	"	
Q36	"	"	
Q37	2SA929(F)	"	
Q38	2SC1685(R)	"	
Q39	2SD1275(P,Q)	"	
Q40	2SC1685(R)	"	
Q41	2SB949(P,Q)	"	
Q42	2SA929(F)	"	
Q43	2SC1685(R)	"	
Q44	"	"	
Q45	"	"	
Q46	2SA929(F)	"	
Q47	2SC1685(R)	"	
Q48	2SD1275(P,Q)	"	
Q49	2SC1685(R)	"	
Q50	2SB949(P,Q)	"	
Q51	2SA929(F)	"	
Q52	2SC1685(R)	"	
Q53	"	"	
Q54	"	"	
Q55	2SC829(C)	"	

Symbol No.	Part No.	Part Name	Description
Q56	2SC829(C)	Si. Transistor	
Q57	2SA838C	"	
D 1	MA165	Si. Diode	
D 2	HZS27JB2	Zener Diode	
D 3	DS135TE	Si. Diode	
D 4	MA165	"	
D 5	HZ6C-2L	Zener Diode	
D 6	HZ15-2L	"	
D 7	—	—	
D 8	HZS27JB2	Zener Diode	
D 9	DS135TE	Si. Diode	
D10	MA165	"	
D11	HZ6C-2L	Zener Diode	
D12	HZ15-2L	"	
D13	—	—	
D14	HZS27JB2	Zener Diode	
D15	DS135TE	Si. Diode	
D16	MA165	"	
D17	HZ6C-2L	Zener Diode	
D18	HZ15-2L	"	
D19	—	—	
D20	HZS27JB2	Zener Diode	
D21	DS135TE	Si. Diode	
D22	MA165	"	
D23	HZ6C-2L	Zener Diode	
D24	HZ15-2L	"	
D25	—	—	
D26	HZS27JB2	Zener Diode	
D27	DS135TE	Si. Diode	
D28	MA165	"	
D29	HZ6C-2L	Zener Diode	
D30	HZ15-2L	"	
D31	—	—	
D32	HZS27JB2	Zener Diode	
D33	DS135TE	Si. Diode	
D34	MA165	"	
D35	HZ6C-2L	Zener Diode	
D36	HZ15-2L	"	
D37	—	—	
D38	—	—	
D39	—	—	
D40	—	—	
D41	—	—	
D42	—	—	
D43	—	—	
D44	MA165	Si. Diode	
D45	"	"	
D46	"	"	
D47	"	"	
D48	"	"	
D49	"	"	
D50	"	"	
D51	DS135D	"	

Symbol No.	Part No.	Part Name	Description
R 1	QRD161J-152	CR	1.5 K 1/6 W J
R 2	" -103	"	10 K " "
R 3	" -391	"	390 " "
R 4	" -820	"	82 " "
R 5	" -273	"	27 K " "
R 6	" -473	"	47 K " "
R 7	" -222	"	2.2 K " "
R 8	QRD121J-562	"	5.6 K 1/2 W "
R 9	" -391	"	390 " "
R10	QRD161J-123	"	12 K 1/6 W "
R11	" -682	"	6.8 K " "
R12	—	—	
R13	QRD121J-2R7	CR	2.7 1/2 W J
R14	QRD161J-222	"	2.2 K 1/6 W "
R15	" -122	"	1.2 K " "
R16	" -122	"	1.2 K " "
R17	" -152	"	1.5 K " "
R18	" -153	"	15 K " "
R19	" -122	"	1.2 K " "
R20	" -562	"	5.6 K " "
R21	" -153	"	15 K " "
R22	" -153	"	15 K " "
R23	" -183	"	18 K " "
R24	" -822	"	8.2 K " "
R25	" -273	"	27 K " "
R26	" -562	"	5.6 K " "
R27	—	—	
R28	QRD161J-472	CR	4.7 K 1/6 W J
R29	—	—	
R30	QRD161J-473	CR	47 K 1/6 W J
R31	" -152	"	1.5 K " "
R32	" -103	"	10 K " "
R33	" -391	"	390 " "
R34	" -820	"	82 " "
R35	" -273	"	27 K " "
R36	" -473	"	47 K " "
R37	" -222	"	2.2 K " "
R38	QRD121J-562	"	5.6 K 1/2 W "
R39	" -391	"	390 " "
R40	QRD161J-123	"	12 K 1/6 W "
R41	" -682	"	6.8 K " "
R42	—	—	
R43	QRD121J-2R7	CR	2.7 1/2 W J
R44	QRD161J-222	"	2.2 K 1/6 W "
R45	" -122	"	1.2 K " "
R46	" -122	"	1.2 K " "
R47	" -152	"	1.5 K " "
R48	" -153	"	15 K " "
R49	" -122	"	1.2 K " "
R50	" -562	"	5.6 K " "
R51	" -153	"	15 K " "
R52	" -153	"	15 K " "
R53	" -183	"	18 K " "
R54	" -822	"	8.2 K " "
R55	" -273	"	27 K " "
R56	" -562	"	5.6 K " "
R57	—	—	
R58	—	—	
R59	—	—	
R60	QRD161J-104	CR	100 K 1/6 W J
R61	" -152	"	1.5 K " "
R62	" -103	"	10 K " "
R63	" -391	"	390 " "
R64	" -820	"	82 " "
R65	" -273	"	27 K " "

Symbol No.	Part No.	Part Name	Description
R66	QRD161J-473	CR	47 K 1/6 W J
R67	" -222	"	2.2 K " "
R68	QRD121J-562	"	5.6 K 1/2 W "
R69	" -391	"	390 " "
R70	QRD161J-123	"	12 K 1/6 W "
R71	" -682	"	6.8 K " "
R72	–	–	
R73	QRD121J-2R7	CR	2.7 1/2 W J
R74	QRD161J-222	"	2.2 K 1/6 W "
R75	" -122	"	1.2 K " "
R76	" -122	"	1.2 K " "
R77	" -152	"	1.5 K " "
R78	" -153	"	15 K " "
R79	" -122	"	1.2 K " "
R80	" -562	"	5.6 K " "
R81	" -153	"	15 K " "
R82	" -153	"	15 K " "
R83	" -183	"	18 K " "
R84	" -822	"	8.2 K " "
R85	" -273	"	27 K " "
R86	" -562	"	5.6 K " "
R87	–	–	
R88	–	–	
R89	–	–	
R90	QRD161J-104	CR	100 K 1/6 W J
R91	" -152	"	1.5 K " "
R92	" -103	"	10 K " "
R93	" -391	"	390 " "
R94	" -820	"	82 " "
R95	" -273	"	27 K " "
R96	" -473	"	47 K " "
R97	" -222	"	2.2 K " "
R98	QRD121J-562	"	5.6 K 1/2 W "
R99	" -391	"	390 " "
R100	QRD161J-123	"	12 K 1/6 W "
R101	" -682	"	6.8 K " "
R102	–	–	
R103	QRD121J-2R7	CR	2.7 1/2 W J
R104	QRD161J-222	"	2.2 K 1/6 W "
R105	" -122	"	1.2 K " "
R106	" -122	"	1.2 K " "
R107	" -152	"	1.5 K " "
R108	" -153	"	15 K " "
R109	" -122	"	1.2 K " "
R110	" -562	"	5.6 K " "
R111	" -153	"	15 K " "
R112	" -153	"	15 K " "
R113	" -183	"	18 K " "
R114	" -822	"	8.2 K " "
R115	" -273	"	27 K " "
R116	" -562	"	5.6 K " "
R117	–	–	
R118	–	–	
R119	–	–	
R120	QRD161J-104	CR	100 K 1/6 W J
R121	" -152	"	1.5 K " "
R122	" -103	"	10 K " "
R123	" -391	"	390 " "
R124	" -820	"	82 " "
R125	" -273	"	27 K " "
R126	" -473	"	47 K " "
R127	" -222	"	2.2 K " "
R128	QRD121J-562	"	5.6 K 1/2 W "
R129	" -391	"	390 " "
R130	QRD161J-123	"	12 K 1/6 W "

Symbol No.	Part No.	Part Name	Description
R131	QRD161J-682	CR	6.8 K 1/6 W J
R132	–	–	
R133	QRD121J-2R7	CR	2.7 1/2 W J
R134	QRD161J-222	"	2.2 K 1/6 W "
R135	" -122	"	1.2 K " "
R136	" -122	"	1.2 K " "
R137	" -152	"	1.5 K " "
R138	" -153	"	15 K " "
R139	" -122	"	1.2 K " "
R140	" -562	"	5.6 K " "
R141	" -153	"	15 K " "
R142	" -153	"	15 K " "
R143	" -183	"	18 K " "
R144	" -822	"	8.2 K " "
R145	" -273	"	27 K " "
R146	" -562	"	5.6 K " "
R147	–	–	
R148	–	–	
R149	–	–	
R150	QRD161J-104	CR	100 K 1/6 W J
R151	" -152	"	1.5 K " "
R152	" -103	"	10 K " "
R153	" -391	"	390 " "
R154	" -820	"	82 " "
R155	" -273	"	27 K " "
R156	" -473	"	47 K " "
R157	" -222	"	2.2 K " "
R158	QRD121J-562	"	5.6 K 1/2 W "
R159	" -391	"	390 " "
R160	QRD161J-123	"	12 K 1/6 W "
R161	" -682	"	6.8 K " "
R162	–	–	
R163	QRD121J-2R7	CR	2.7 1/2 W J
R164	QRD161J-222	"	2.2 K 1/6 W "
R165	" -122	"	1.2 K " "
R166	" -122	"	1.2 K " "
R167	" -152	"	1.5 K " "
R168	" -153	"	15 K " "
R169	" -122	"	1.2 K " "
R170	" -562	"	5.6 K " "
R171	" -153	"	15 K " "
R172	" -153	"	15 K " "
R173	" -183	"	18 K " "
R174	" -822	"	8.2 K " "
R175	" -273	"	27 K " "
R176	" -562	"	5.6 K " "
R177	–	–	
R178	–	–	
R179	–	–	
R180	QRD161J-271	CR	270 1/6 W J
R181	" -683	"	68 K " "
R182	" -123	"	12 K " "
R183	" -683	"	68 K " "
R184	" -393	"	39 K " "
R185	" -122	"	1.2 K " "
R186	" -681	"	680 " "
R187	" -151	"	150 " "
R188	" -102	"	1 K " "
R189	" -122	"	1.2 K " "
CP 1	ICP-N25	CP	
CP 2	"	"	
CP 3	"	"	
CP 4	"	"	
CP 5	"	"	
CP 6	"	"	

Symbol No.	Part No.	Part Name	Description
C 1	QCS11HJ-101	C Cap	100 P 50 V J
C 2	QETB1EM-227	E Cap	220
C 3	QETA1AM-107	"	100 10 V
C 4	QETA1VM-227	"	220 35 V
C 5	QETB1HM-107	"	100 50 V
C 6	QCS11HJ-220	C Cap	22 P " J
C 7	QETA0JM-337	E Cap	330 6.3 V
C 8	QETA1HM-475	"	4.7 50 V
C 9	" -475	"	4.7 "
C10	QFN31HJ-222	MY Cap	2200 P " J
C11	QCS11HJ-101	C Cap	100 P " "
C12	QETB1EM-227	E Cap	220 25 V
C13	QETA1AM-107	"	100 10 V
C14	QETA1VM-227	"	220 35 V
C15	QETB1HM-107	"	100 50 V
C16	QCS11HJ-220	C Cap	22 P " J
C17	QETA0JM-337	E Cap	330 6.3 V
C18	QETA1HM-475	"	4.7 50 V
C19	" -475	"	4.7 "
C20	QFN31HJ-222	MY Cap	2200P " J
C21	QCS11HJ-101	C Cap	100 P " "
C22	QETB1EM-227	E Cap	220 25 V
C23	QETA1AM-107	"	100 10 V
C24	QETA1VM-227	"	220 35 V
C25	QETB1HM-107	"	100 50 V
C26	QCS11HJ-220	C Cap	22 P " J
C27	QETA0JM-337	E Cap	330 6.3 V
C28	QETA1HM-475	"	4.7 50 V
C29	" -475	"	4.7 "
C30	QFN31HJ-222	MY Cap	2200P " J
C31	QCS11HJ-101	C Cap	100 P " "
C32	QETB1EM-227	E Cap	220 25 V
C33	QETA1AM-107	"	100 10 V
C34	QETA1V-227	"	220 35 V
C35	QETB1HM-107	"	100 50 V
C36	QCS11HJ-220	C Cap	22 P " J
C37	QETA0JM-337	E Cap	330 6.3 V
C38	QETA1HM-475	"	4.7 50 V
C39	" -475	"	4.7 "
C40	QFN31HJ-222	MY Cap	2200 P " J
C41	QCS11HJ-101	C Cap	100 P " "
C42	QETB1EM-227	E Cap	220 25 V
C43	QETA1AM-107	"	100 10 V
C44	QETA1VM-227	"	220 35 V
C45	QETB1HM-107	"	100 50 V
C46	QCS11HJ-220	C Cap	22 P " J
C47	QETA0JM-337	E Cap	330 6.3 V
C48	QETA1HM-475	"	4.7 50 V
C49	" -475	"	4.7 "
C50	QFN31HJ-222	C Cap	2200 P " J
C51	" -101	"	100 P " "
C52	QETB1EM-227	E Cap	220 25 V
C53	QETA1AM-107	"	100 10 V
C54	QETA1VM-221	"	220 35 V
C55	QETB1HM-107	"	100 50 V
C56	QCS11HJ-220	C Cap	22 P " J
C57	QETA0JM-337	E Cap	330 6.3 V
C58	QETA1HM-475	"	4.7 50 V
C59	-475	"	4.7 "
C60	QFN31HJ-222	MY Cap	2200 P " "
C61	QCS31HJ-471	C Cap	470 " "
C62	" -471	"	470 " "
C63	" -471	"	470 " "
C64	" -471	"	470 " "
C65	" -471	"	470 " "

Symbol No.	Part No.	Part Name	Description
C66	QCS11HJ-471	C Cap	470 P 50 V P
C67	—	—	
C68	—	—	
C69	—	—	
C70	QETA1CM-476	E Cap	47 16 V
C71	QETA1AM-107	"	100 10 V
C72	QETA1CM-476	"	47 16 V
C73	QCS11HJ-5R0	C Cap	5 P 50 V J
C74	QETA1HM-476	E Cap	47 "
C75	QETA1CM-476	"	47 16 V
C76	" -476	"	47 "
C77	—	—	
C78	QETA1CM-476	E Cap	47 16 V
C79	QCF11HP-103	C Cap	0.01 50 V P
C80	QETA1HM-228	E cap	2200 "
RB 1	QRB061K-153	Resistor Array	
RB 2	" -153	"	
RB 2	" -223	"	
RB 3	" -473	"	
RB 4	" -104	"	
L 1	SCV0713	Choke Coil	390 μH
L 2	"	"	390 μH
L 3	"	"	390 μH
L 4	"	"	390 μH
L 5	"	"	390 μH
L 6	"	"	390 μH
CN 9	SS30644-012	Connector	12 Pin
CN16	" -007	"	7 Pin
CN18	" -003	"	3 Pin
CN171	" -003	"	3 Pin
CN172	" -003	"	3 Pin

6.1.7 HIC board assembly (TM-9060 only)

Symbol No.	Part No.	Part Name	Description
IC 1	TC4051BP	IC (M)	
D 1	MA165	Si. Diode	
D 2	"	"	
D 3	"	"	
D 4	"	"	
D 5	"	"	
D 6	"	"	
C 1	QCS11HJ-221	C Cap	220 P 50 V J
C 2	" -221	"	220 P " "
C 3	" -221	"	220 P " "
C 4	" -221	"	220 P " "
C 5	" -221	"	220 P " "
C 6	" -221	"	220 P " "
RB 1	QRB061K-104	Resistor Array	100 K
CN20	SCV0754-007	HIC Header	
CN21	" -007	"	

6.1.8 CMD board assembly (TM-9010 only)

Symbol No.	Part No.	Part Name	Description
IC 1	HD44007A	IC (M)	HITACHI
IC 2	TC4011BP	"	TOSHIBA
IC 3	TC4538BP	"	"
IC 4	TC4528BP	"	"
IC 5	TC4538BP	"	"
IC 6	TC4520BP	"	"
IC 7	TC4011BP	"	"
IC 8	TC4001BP	"	"
IC 9	TC4066BP	"	"
IC10	TC4538BP	"	"
IC11	TL082CP	"	TEXAS
IC12	TC4538BP	"	TOSHIBA
IC13	AN6914	"	MATSUSHITA
IC14	TC4011BP	"	TOSHIBA
IC15	TC4001BP	"	"
IC16	AN6780	"	MATSUSHITA
IC17	TC4011BP	"	TOSHIBA
IC18	TC4538BP	"	"
Q 1	2SD1275(P,Q)	Si. Transistor	
Q 2	2SC1685(R)	"	
Q 3	"	"	
Q 4	"	"	
Q 5	2SA929(F)	"	
Q 6	2SB949(P,Q)	"	
Q 7	2SC1685(R)	"	
Q 8	"	"	
Q 9	"	"	
Q10	2SA929(F)	"	
Q11	2SC829(C)	"	
Q12	2SA838C	"	
Q13	2SC829(C)	"	
Q14	"	"	
Q15	2SA838C	"	
Q16	2SC829(C)	"	
Q17	2SC1685(R)	"	
Q18	"	"	
Q19	"	"	
Q20	2SA929(F)	"	
Q21	2SC829(C)	"	
Q22	"	"	
Q23	"	"	
Q24	2SC1685(R)	"	
Q25	2SC829(C)	"	
Q26	2SC1685(R)	"	
Q27	2SA929(F)	"	
Q28	2SC1685(R)	"	
D 1	HZS27JB2	Zener Diode	27 V HITACHI
D 2	MA165	Si. Diode	
D 3	DS135TE	"	
D 4	HZ6C-2L	Zener Diode	16 V HITACHI
D 5	HZ15-2L	"	15 V "
D 6	—	—	
D 7	HZS6.8JB2	Zener Diode	6.8 V "
D 8	MA165	Si. Diode	
D 9	"	"	

Symbol No.	Part No.	Part Name	Description
D10	HZS6.8JB2	Zener Diode	6.8 V HITACHI
D11	MA165	Si. Diode	
D12	"	"	
D13	"	"	
D14	"	"	
D15	"	"	
D16	"	"	
R 1	QRD121J-562	CR	5.6 K 1/2 W J
R 2	" -391	"	390 " "
R 3	QRD161J-103	"	10 K 1/6 W "
R 4	" -103	"	10 K " "
R 5	" -103	"	10 K " "
R 6	" -103	"	10 K " "
R 7	" -103	"	10 K " "
R 8	" -223	"	22 K " "
R 9	" -222	"	2.2 K " "
R10	" -152	"	1.5 K " "
R11	QRD121J-2R7	"	2.7 1/2 W "
R12	QRD161J-562	"	5.6 K 1/6 W "
R13	" -122	"	1.2 K " "
R14	" -822	"	8.2 K " "
R15	" -122	"	1.2 K " "
R16	" -332	"	3.3 K " "
R17	" -183	"	18 K " "
R18	" -562	"	5.6 K " "
R19	" -273	"	27 K " "
R20	" -122	"	1.2 K " "
R21	" -152	"	1.5 K " "
R22	" -103	"	10 K " "
R23	" -391	"	390 " "
R24	" -820	"	82 " "
R25	" -823	"	82 K " "
R26	" -333	"	33 K " "
R27	" -122	"	1.2 K " "
R28	" -681	"	680 " "
R29	" -151	"	150 " "
R30	" -102	"	1 K " "
R31	" -392	"	3.9 K " "
R32	" -332	"	3.3 K " "
R33	" -474	"	470 K " "
R34	" -103	"	10 K " "
R35	" -222	"	2.2 K " "
R36	" -392	"	3.9 K " "
R37	" -332	"	3.3 K " "
R38	" -101	"	100 " "
R39	" -221	"	220 " "
R40	" -472	"	4.7 K " "
R41	" -222	"	2.2 K " "
R42	" -471	"	470 " "
R43	" -820	"	82 " "
R44	" -102	"	1 K " "
R45	" -471	"	470 " "
R46	" -562	"	5.6 K " "
R47	" -223	"	22 K " "
R48	" -471	"	470 " "
R49	" -151	"	150 " "
R50	" -103	"	10 K " "
R51	" -102	"	1 K " "
R52	" -222	"	2.2 K " "
R53	" -123	"	12 K " "
R54	" -332	"	3.3 K " "

Symbol No.	Part No.	Part Name	Description
R55	QRD161J-472	CR	4.7 K 1/6 W J
R56	" -680	"	68 " "
R57	" -680	"	68 " "
R58	" -393	"	39 K " "
R59	" -123	"	12 K " "
R60	" -332	"	3.3 K " "
R61	" -472	"	4.7 K " "
R62	" -105	"	1 M " "
R63	" -333	"	33 K " "
R64	" -103	"	10 K " "
R65	" -123	"	12 K " "
R66	" -332	"	3.3 K " "
R67	" -153	"	15 K " "
R68	" -103	"	10 K " "
R69	—	—	
R70	QVPD601-224	VR	220 K
R71	QRD161J-472	CR	4.7 K 1/6 W J
R72	—	—	
R73	QVPD601-104	VR	100 K
R74	QRD161J-472	CR	4.7 K 1/6 W J
R75	—	—	
R76	QVPD601-474	VR	470 K
R77	QRD161J-472	CR	4.7 K 1/6 W J
R78	—	—	
R79	QVPD601-224	VR	220 K
R80	QRD161J-472	CR	4.7 K 1/6 W J
R81	" -224	"	220 K " "
R82	" -223	"	22 K " "
R83	" -474	"	470 K " "
R84	QRV141F-1002	MFR	10 K 1/4 W F
R85	" -2202	"	20 K " "
R86	QRD161J-101	CR	100 1/6 W J
R87	QRV141F-1002	MFR	10 K 1/4 W F
R88	" -2202	"	20 K " "
R89	QRD161J-101	CR	100 1/6 W J
R90	" -103	"	10 K " "
R91	" -153	"	15 K " "
R92	" -224	"	220 K " "
R93	QVPD601-473	VR	47 K
R94	QRD161J-683	CR	68 K 1/6 W J
R95	" -681	"	680 " "
R96	" -393	"	39 K " "
R97	QVPD601-224	VR	220 K
R98	—	—	
R99	QRD161J-683	CR	68 K 1/6 W J
R100	" -472	"	4.7 K " "
R101	" -472	"	4.7 K " "
R102	" -472	"	4.7 K " "
R103	" -472	"	4.7 K " "
R104	" -153	"	15 K " "
R105	" -153	"	15 K " "
R106	" -153	"	15 K " "
R107	" -103	"	10 K " "
R108	" -153	"	15 K " "
R109	" -153	"	15 K " "
R110	" -474	"	470 K " "
R111	" -153	"	15 K " "
R112	" -103	"	10 K " "
R113	" -152	"	1.5 K " "
R114	—	—	
R115	QVPBA01-504	VR	500 K
R116	QRD161J-224	CR	220 K 1/6 W J
R117	" -124	"	120 K " "
R118	" -153	"	15 K " "
R119	" -124	"	120 K " "

Symbol No.	Part No.	Part Name	Description
R120	QRD167J-102	CR	1 K 1/6 W J
R121	" -472	"	4.7 K " "
R122	" -153	"	15 K " "
R123	" -222	"	2.2 K " "
R124	" -223	"	22 K " "
R125	" -223	"	22 K " "
R126	" -562	"	5.6 K " "
R127	" -101	"	100 " "
R128	—	—	
R129	QRD161J-224	CR	220 K 1/6 W J
R130	" -334	"	330 K " "
R131	" -124	"	120 K " "
R132	" -124	"	120 K " "
R133	" -683	"	68 K " "
R981	QRD161J-683	CR	68 K 1/6 W J
R982	" -224	"	220 K " "
C 1	QETA1HM-228	E Cap	2200 50 V
C 2	" -476	"	47 "
C 3	" -475	"	4.7 "
C 4	QETA1VM-107	"	100 35 V
C 5	QETA0JM-337	"	330 6.3 V
C 6	QETA1HM-475	"	4.7 50 V
C 7	" -475	"	4.7 "
C 8	QCS11HJ-101	C Cap	100 P " J
C 9	QETA1EM-227	E Cap	220 25 V
C10	QETA1AM-107	"	100 10 V
C11	QFN41HJ-223	MY Cap	0.022 50 V J
C12	QETA1AM-107	E Cap	100 10 V
C13	" -477	"	470 "
C14	" -107	"	100 "
C15	QCS11HJ-151	C Cap	150 P 50 V J
C16	QAT3001-102	TR Cap	
C17	—	—	
C18	QCS11HJ-330	C Cap	33 P 50 V J
C19	" -470	"	47 P " "
C20	QETA1AM-107	E Cap	100 10 V
C21	QFN41HJ-222	MY Cap	2200 P 50 V J
C22	QCS11HJ-471	C Cap	470 P " "
C23	" -221	"	220 P " "
C24	QFN41HJ-473	MY Cap	0.047 " " (for U-type)
C24	" -563	"	0.056 50 V J (for E-type)
C25	" -273	"	0.027 50 V J (for U-type)
C25	" -333	"	0.033 50 V J (for E-type)
C26	QCS11HJ-221	C Cap	220 P 50 V J
C27	QEPA0JM-476	E Cap	47 6.3 V
C28	QFP42AF-473	PP Cap	0.047 100 V
C29	" -473	"	0.047 "
C30	QFN41HJ-222	MY Cap	2200 P 50 V J
C31	QCS11HJ-101	C Cap	100 P " "
C32	QFN41HJ-222	MY Cap	2200 P " "
C33	QETA1AM-107	E Cap	100 10 V
C34	QETA1HM-475	"	4.7 50 V

Symbol No.	Part No.	Part Name	Description
C35	QETA1HM-475	E Cap	4.7 50 V
C36	QCS11HJ-221	C Cap	220 P " J
C37	QETA1HM-475	E Cap	4.7 "
C38	QFN41HJ-224	MY Cap	0.22 " J
C39	QEB41CM-107	E Cap	100 16 V
C40	QEPA1HM-225	"	2.2 50 V
C41	QFN41HJ-102	MY Cap	1000 P " J
C42	QCS11HJ-221	C Cap	220 P " "
C43	QETA1HM-475	E Cap	4.7 "
C44	—	—	
C45	—	—	
C46	QETA1CM-107	E Cap	100 16 V
C47	QFN41HJ-224	MY Cap	0.22 50 V J
C48	QETA1HM-475	E Cap	4.7 "
C49	QFN41HJ-563	MY Cap	0.056 50 V
C50	QCS11HJ-101	C Cap	100 P 50 V J
C441	QCF11HP-473	C Cap	0.043 50 V P
C442	" -473	"	0.043 " "
C443	" -473	"	0.043 " "
C444	—	—	0.043 " "
C445	QCF11HP-473	C Cap	
C446	" -473	"	0.043 50 V P
C447	" -473	"	0.043 " "
C448	" -473	"	0.043 " "
C449	—	—	
C450	—	—	
C451	QETA1CM-107	E Cap	100 16 V
C452	" -107	"	100 "
C453	" -107	"	100 "
C454	" -107	"	100 "
C455	" -107	"	100 "
C456	" -107	"	100 "
L 1	SCV0713	Choke Coil	390 μH
RY 1	AG2303	Relay	
J13	QMC0889-005	Socket	
S 1	QSS1B23-S01	Slide Switch	
BZ 1	SSV0275	Buzzer	
CF 1	SC42004-415	Cera. Filter	for U-type
CF 2	" -445	"	for E-type
CN11	SS30644-002	Post Header	
CN12	" -002	"	
CN13	" -004	"	
CN19	" -003	"	